

# **Idaho Transportation Department**

## **Fiscal Year 2008 - 2009 Greenhouse Gas Emission Reduction Action Plan**

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**January 18, 2008**

C.L. "BUTCH" OTTER  
GOVERNOR

EXECUTIVE DEPARTMENT  
STATE OF IDAHO  
BOISE

**EXECUTIVE ORDER NO. 2007-05**

**ESTABLISHING A STATE POLICY REGARDING THE ROLE OF STATE GOVERNMENT IN REDUCING  
GREENHOUSE GASES**

*WHEREAS, there are indications that atmospheric concentrations of greenhouse gases are rising and are projected to continue to increase; and*

*WHEREAS, human activities contribute to creation of greenhouse gases; and*

*WHEREAS, greenhouse gases are believed to trap heat in the atmosphere and have been linked by the U.S. National Academy of Sciences to drought, reduced snow pack, altered precipitation patterns, more severe forest and rangeland fires, and forest diseases; and*

*WHEREAS, the Western Governors' Association projects that rising levels of greenhouse gases in the atmosphere could have economic and environmental impacts on the West in coming decades, and*

*WHEREAS, the causes and effects of rising greenhouse gases, to the degree they are understood, may extend to the Western United States and the State of Idaho, and it is incumbent upon states to take a leadership role in developing responsive state-level policies and programs to reduce greenhouse gas emissions, develop alternative energy sources and use energy efficiently,*

*NOW, THEREFORE, I, C.L. "BUTCH" OTTER, Governor of the State of Idaho, by the authority vested in me under the Constitution and the laws of the State of Idaho do hereby order that:*

- 1. The Director of the Department of Environmental Quality shall take a leadership role to work with all state government departments and agencies and shall serve as the central point of contact for coordination and implementation of greenhouse gas reduction efforts and other associated activities.*
- 2. The Director of the Department of Environmental Quality shall develop a greenhouse gas emission inventory and provide recommendations to the Governor on how to reduce greenhouse gas emissions in Idaho, recognizing Idaho's interest in continued growth, economic development and energy security.*

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## **BACKGROUND**

### **Introduction**

This action plan is being developed as part of a comprehensive effort by the State of Idaho to reduce greenhouse gas (GHG) emissions. Through Executive Order No. 2007-05, Governor Otter directed the Department of Environmental Quality (DEQ) to work with all state agencies to develop and implement GHG emission reductions. Though Idaho state government's contributions are relatively minor compared to the rest of the state and particularly the rest of the nation, it is our obligation to lead by example before we expect anyone else to make similar efforts and reductions. Each state government agency is responsible for developing a GHG emission reduction agency action plan. Governor Otter has also published Executive Order No. 2007-21, which mandates that state agencies will decrease the amount of gasoline and diesel used in state vehicles, shall limit the purchase of four-wheel drive sport utility vehicles and shall give priority to the purchase and use of hybrid/gas electric and other fuel efficient/low emission vehicles.

Greenhouse gases include carbon dioxide (CO<sub>2</sub>), nitrous oxide (N<sub>2</sub>O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF<sub>6</sub>). These compounds have differing levels of warming potential and atmospheric persistence. In order to streamline the reporting of greenhouse gas emissions, climate scientists have developed a convention of reporting emissions as tons per year of carbon dioxide equivalent (CO<sub>2</sub>e). To do this, the various greenhouse gases are assigned a weighting factor and emissions of a given greenhouse gas are multiplied by its associated factor. The greenhouse gas emissions in this document are reported as CO<sub>2</sub>e.

This plan is the Idaho Transportation Department's (ITD) effort to identify policy, management, purchasing, work practice, and other changes that will result in a reduction in agency GHG emissions. This plan also identifies ITD's GHG emissions baseline that will be used to quantify emission reductions, to identify areas for additional action, and to provide information on how effective particular actions are. ITD participated in the statewide agency group called together by DEQ and has also established an internal Green House Gas Emission Reduction team. The action plan was developed by that team and reviewed and approved by ITD management.

### **Baseline Emission Calculations**

The statewide Green House Gas team established under the Governor's Executive Order determined that GHG emission from each agency could be assigned to three categories; buildings (electricity and heating), vehicle fleet and equipment, and employee commutes. For activities within those categories, appropriate EPA emission factors were used to determine the agency's baseline (FY2007) GHG emissions for the State and Regional offices.

In fiscal year 2007, ITD emitted a total of 30,600 tons of CO<sub>2</sub>e. Figures 1 and 2 are graphical representations of ITD's greenhouse gas emissions and how they are apportioned. ITD has significant transportation and highway responsibilities.

The majority, 63% of ITD's emissions come from our equipment and fleet use which at this time far exceeds the 11% attributed to staff commute based on the results of the employee survey. Building emissions through heating and electrical usage account for 26% of our emissions.

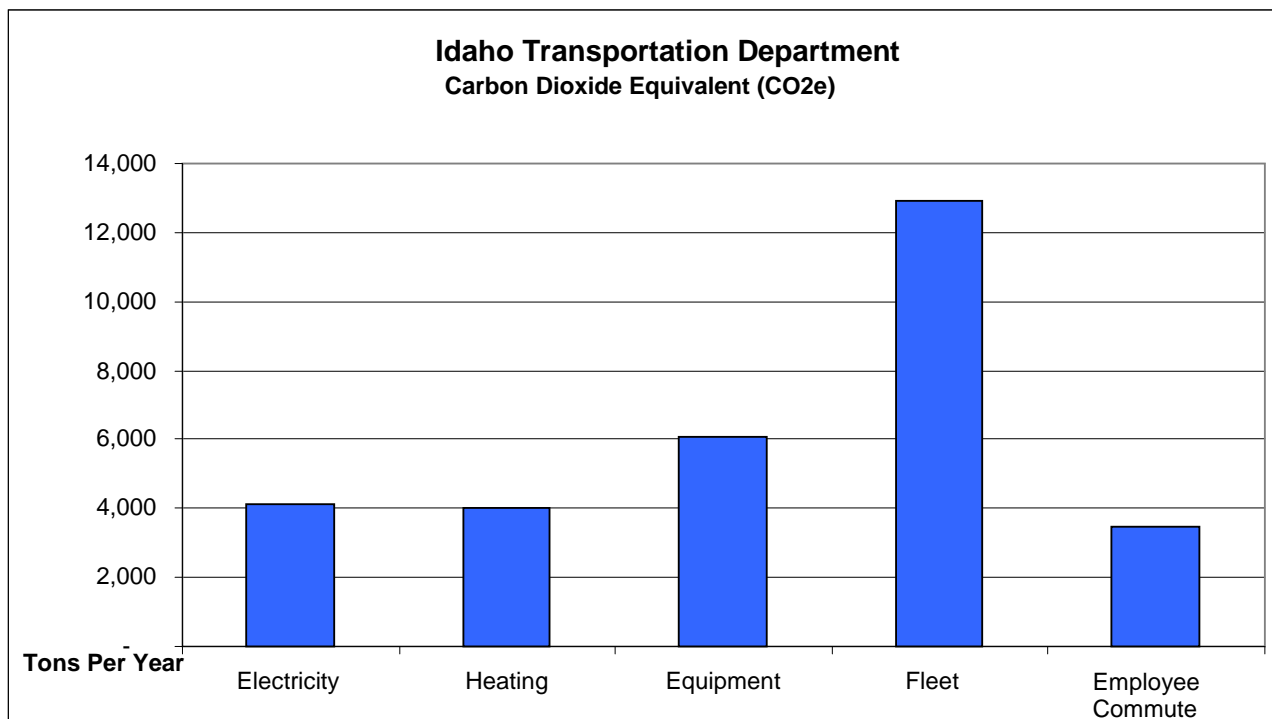


Figure 1. Emissions of carbon dioxide equivalent by activity.

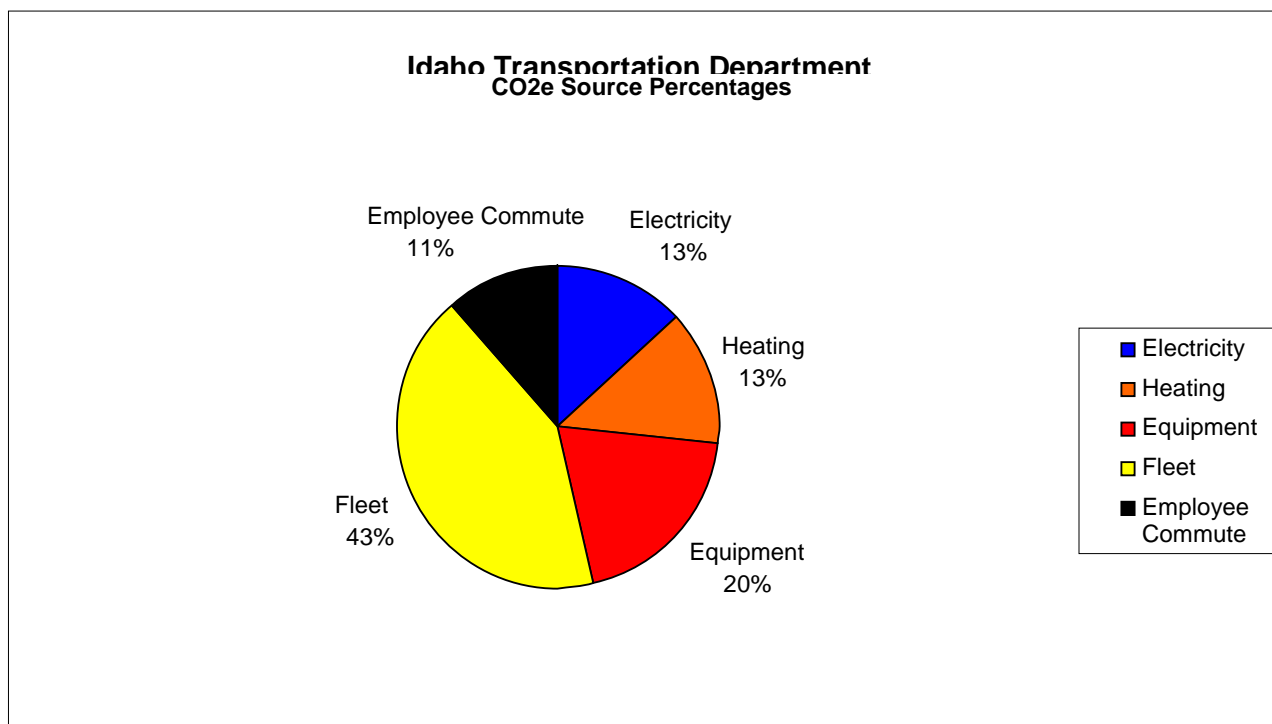


Figure 2. Percent of total CO<sub>2</sub>e emissions by activity.

## Buildings

**Heating:** Emission factors exist for all forms of combustion. These factors are derived from studies and tests completed for the sole purpose of finding an emissions rate for specific pollutant emitted by that activity and based on the rate of consumption of that fuel. ITD total greenhouse gas emissions due to the combustion of fuels is 4,008 tons per year. Specific information on heating data collection and emission calculation can be found in Appendix B.

**Electricity:** Historically, much of Idaho's electricity has been "imported" into the state from power plants in neighboring states. DEQ calculated the emissions by using the amount of kilowatt hours (kWh) used/reported by each state agency, the fraction of power reported by the electricity providers that was coal, natural gas, or oil, and the emission factors that correspond to the methods used to generate that imported power (i.e., coal, oil, etc.). **Electricity use by ITD produced 4,113 tons per year of CO<sub>2</sub>e.** Specific information on electricity collection and emission calculation can be found in Appendix C.

## Vehicle Fleet, Non-Road Vehicles and Equipment

ITD collected data on vehicle miles traveled, vehicle type and fuel type and used EPA's MOBILE6.2 model to calculate GHG emissions from use of ITD vehicles. Similar data for non-road vehicles and equipment was entered into EPA's NONROAD model to determine their emissions. **Use of vehicles and equipment resulted in the emission of 19,013 tons per year of CO<sub>2</sub>e.** Specific information on vehicle fleet data collection and emission calculation can be found in Appendix D.

## Employee Commute

To determine the amount of GHG emissions that could be attributed to employee commutes, a survey was developed that had specific questions about vehicle types, fuel types, and trip lengths that could be used to calculate emissions for this activity. In addition, the survey included questions that will be considered in developing actions to reduce emissions from this activity. **Estimated CO<sub>2</sub>e emissions due to ITD employees commuting to and from work are 3,468 tons per year.** Specific information on data collection and emission calculation can be found in Appendix E.

# **ACTION PLANS**

## General Approach

ITD reviewed the GHG emissions data for FY2007 and has developed a plan to reduce those emissions. This plan has elements both of actions that should reduce emissions and also information gathering. Some decisions cannot be made without additional data collection and review.

High priority will be given to determining what criteria should be applied in making an emission reduction action that will involve up-front costs. In many cases reducing GHG emissions reduces operating costs (i.e. less electricity or fuel used). However, new equipment may be required to make the reductions and there may be a substantial up-front cost.

## **Buildings**

### **Background:**

ITD has 565 buildings that it maintains throughout the state. They run the gamut of major office buildings for our headquarters and district operations, to maintenance sheds, rest areas and mechanical and fabrication shops.

### **Previous Accomplishments:**

Over the past ten years ITD has actively pursued efficient operations in its buildings. Below is a listing of actions taken that are designed to increase efficiency.

#### *ITD Headquarters Complex and Districts Efficiencies*

##### *Headquarters*

- Replaced the old heat pumps in the main headquarters with high efficiency gas boilers and variable speed chillers.
- Replaced most of the fluorescent light fixtures in the headquarters building with high efficiency T-8 parabolic fixtures that reduce energy consumption and also eliminate computer screen glare.
- Replaced old carpet with carpet tile to eliminate dismantling and re-assembling cubicles.
- Replaced the old roof on the supply service building with a cool roof to reduce heat gain.
- Replaced the IT UPS room HVAC with a high efficiency roof top unit.
- Installed new reflective shatterproof window film on headquarters building to reduce heat gain.
- Installed three automatic landscape sprinkler timers for water conservation.
- Replaced old 300 watt exterior lights with new 100 watt high pressure sodium lamps for better light and energy conservation.
- Converted most water closet flush valves to motion sensor valves to conserve water.
- All but a small amount of landscape irrigation water is recycled from the Headquarters heat exchanger.
- Replace electric heaters with new gas roof top heaters and high efficiency boiler on the Annex Building.
- Replaced incandescent lamps in headquarter's lobby with low watt fluorescent lamps.

##### *Districts:*

- Installed Statewide Data Networking System.
- Installed Statewide Security Networking System.
- Constructed approximately 90 new sand sheds which reduces material waste and load time of sanders by about two thirds.
- Constructed about 31 new equipment storage buildings which saves rubber and paint on equipment and keeps loaded sanders out of the rain, snow and frost.
- Constructed additions to 17 maintenance building to provide sufficient space for the new 10-wheeled winter maintenance equipment.
- Designing new maintenance HVAC controls for the District #1 Headquarters.
- Constructed a new maintenance shop at Peterson with high efficiency insulation and heating system.
- Upgraded the District #2 headquarters HVAC system.
- Bidding new heating system in the District #2 main shop.
- Added new High-R insulation and new roof on Orofino maintenance building.
- Constructed a new maintenance building for Weippe with high efficiency insulation.

- Added new high efficiency insulation in the Craigmont maintenance building.
- Added two new better insulated bunkhouses at Powell.
- Constructed a new maintenance building for Bovill with high efficiency insulation.
- Installed new high efficiency HVAC system in District #3 headquarters.
- Installed a new cool roof on the sign shop.
- Installed new insulation and more efficient heating system in the Cascade maintenance building.
- Constructed a new maintenance building with high efficiency insulation and highly efficient floor heat for the Council yard.
- Installed new insulation and insulated windows in the Lowman maintenance building.
- Constructed new residence in Riddle with high efficiency insulation.
- Constructed a new maintenance building at Orchard yard with high efficiency insulation and highly efficient floor heat.
- Constructed new efficient east and west bound rest area at Blacks Creek. Constructed new efficient east and west bound rest area at Bliss.
- Added insulation to Hailey maintenance building.
- Constructed new maintenance building with high efficiency insulation at Fairfield.
- New well insulated bunkhouse and two new residences in the Hailey yard.
- Constructed new maintenance building with high efficiency insulation at Rupert.
- Removed old north and south bound Inkom rest areas.
- Installed new HVAC system in District #5 headquarters.
- Constructed new maintenance building with high efficiency insulation at Pocatello.
- Added high-R wall insulation at Driggs maintenance building
- Constructed new maintenance building with high efficiency insulation and highly efficient floor heat in Idaho Falls.
- Added more insulation in the Ashton maintenance building.
- Constructing a new more efficient Big Lost River rest area.
- Added more insulation in the Irwin maintenance building.
- Remodeling and adding more insulation in the Clark Hill Rest Area.
- Added more insulation in the Island Park maintenance building.
- Constructed new addition and remodel to District #6 headquarters with more insulation and high efficiency HVAC system.
- Added more insulation in the Sugar City maintenance building.
- Converted most rest area lavatory and water closet valves to motion censer valves to conserve water.

ITD installed a video conference system between ITD headquarters and each ITD district in 2006. Since going on-line there have been a total of 432 video conferences saving considerable travel between locations and increasing ITD's efficiency. Below is data by year:

June 1, 2006 to December 31, 2006: 149 conferences

Jan 1, 2007 to December 31, 2007: 267 conferences

### **Building Action Plan FY 2008-2009**

ITD plans to improve energy efficiency through a number of initiatives:

- By April 1, 2008 publish an ITD Director's memo on Energy Conservation and Greenhouse Gas Reduction Guidelines. See Appendix F.



- By June 2009 improve the efficiency of our District 1 office by replacing all outdated building thermostats.
- Encourage further use of our video conference system and increase usage by 10% by CY 2009 over CY 2007.
- Energy Audits – By July 2009 energy audits for all ITD offices will be completed. The audits will include analyses of heating, ventilation and air conditioning, lighting, and equipment. Based on the results of the audits ITD will evaluate the projected costs for improvements, the expected efficiency improvements, and the expected timeframe to make the improvements. This information will be used to prioritize projects and develop an implementation schedule.

## **Fleet**

### **Background:**

ITD has a significant need to manage Idaho's transportation system. Much of our operational activity involves travel on our roads to maintain their functionality. Realizing the economic impact to the agency of the cost of fuel as well as the impact to the environment of emissions due to that use, ITD seeks to implement procedures that utilize our maintenance fleet in as efficient manner as possible.

### **Previous Accomplishments:**

Covered sanding sheds are appropriately located so that our winter maintenance vehicles are able to pick up fresh loads when empty. This means that vehicles are always maintaining the road and not running empty to return to a sand shed. Over the last ten years our sheds have been covered, which means our loaders no longer have to remove frozen material before they can actually load a truck with deicing material. This gets our plowing truck back on the road faster and means our loading equipment is just loading material, not moving some out of the way.

During 2003 to 2007 ITD added wing plows to 61 of its large snowplows. This allows a single truck to plow a 12-foot lane and shoulder at the same time rather than requiring two trucks to plow in tandem. Wing plows not only save fuel and maintenance costs, they allow drivers to finish priority routes sooner and then plow secondary routes. This is providing more timely service and a safer winter driving experience while not increasing either personnel or truck complements.

Another system that reduces vehicle usage is our digitized video log which allows employees to view the entire state highway system from their desktop computers—saving travel time and money. When a section of highway is being discussed, it can now be viewed from an employee's desktop. The department has long maintained a video log of the state's highway system, but access to the taped archive was limited. By digitizing the log, now employees statewide can access the tool while making decisions—often eliminating the need to travel to the site.

In November 2007, ITD purchased a snow plow simulator. Safely driving a snowplow requires skill. Maneuvering 30 tons of equipment through blizzards, traffic and on challenging highways is difficult. From 2001 to 2006, the transportation department experienced 169 snowplow accidents at a cost of more than \$300,000. A vast majority of the accidents involved drivers with less than five years experience. That's why the department is following the lead of several other states in purchasing a snow plow simulator to train its new drivers and reduce accidents. Based on other's state's experiences, it is estimated the department will save \$61,000 annually through accident reductions,

fuel efficiency and equipment wear. Employees will begin training with the simulator for the 2008-09 winter season.

### **Fleet Action Plan FY 2008-2009**

ITD continually evaluates our equipment replacement schedule in accordance with current available budget funds for replacing equipment in order to reduce emissions. Current schedules dictate that the average life of the fleet should be 13 years while current budget restraints only allow ITD to replace the fleet on a 16 to 17 year basis. Therefore, replacing the fleet in order to reduce emissions is more of a budget consideration than a published replacement schedule. As part of our action items ITD will quickly determine how best to implement the Governor's Executive Order 2007-21, see Appendix F.

Other plans to reduce emissions from vehicles used in the course of business:

- By April 1, 2008 publish an ITD Director's memo on Energy Conservation and Greenhouse Gas Reduction Guidelines. See Appendix F.
- Idle Time – By July 2009, ITD will complete an evaluation of LED amber warning lights in terms of cost effectiveness, visibility, brightness, and contrast. We will then begin utilizing these types of warning lights in an effort to reduce electrical amperage draw. This will allow ITD vehicles to be shut off while in stationary positions in lieu of having the vehicle engine idle in order to provide power to standard warning lamps.
- Idle Time – By January 2009, ITD will evaluate current fleet practices and develop an anti-idle policy for ITD fleet equipment. In conjunction, those units of equipment equipped with idle shut-down timers will have the timer set in accordance with ITD policy.
- Hybrid Vehicle Use – By August 2008, ITD will have evaluated the various hybrid vehicles offered from manufacturer's to determine if these vehicles are offered in configurations that will meet ITD vehicle needs. For those vehicle types, ITD will begin purchasing additional hybrid vehicles in FY 2009.
- Existing Hybrid Vehicle Use – By June 2008, ITD will implement a policy encouraging vehicle users to utilize our existing Hybrid vehicles on long multiple day trips. Currently, hybrid vehicles are only used for short trips within the Boise valley and as a result, the total vehicle mileage is low.
- E85 Fueling Site – By July 2009, ITD will conduct a cost/benefit analysis of having an E85 fuel site located at the District 3 Headquarters facility. This analysis will address the costs associated with the facility in conjunction with the quantity of E85 compatible vehicles that are owned and operated by ITD and other state agencies.
- Fuel Consumption Evaluation – By July, 2008, ITD will conduct an evaluation of our vehicle fuel consumption in terms of miles per gallon for calendar years, 2005, 2006, and 2007. This evaluation will provide ITD with fuel consumption data in order to develop additional action plans aimed at improving the fuel efficiency of our vehicles. ITD recognizes the need to reduce

emissions and cut fuel use, but we also must keep our roads safe, especially during winter driving months. The severity of any given winter can impact the amount of miles driven by our maintenance vehicles as can the proximity of a road project to inspection by staff. These variables may make it difficult in any one year to reduce emissions. Our goal is to develop a five year running average, which will help to normalize the variability in any given year. With this information ITD will be able to establish a reduction goal without comprising the safety of the driving public.

- Immediately ITD will track alternative fuel purchases in order to take credit for reductions due to the renewable portion of the fuel.

## **Commute**

### **Background:**

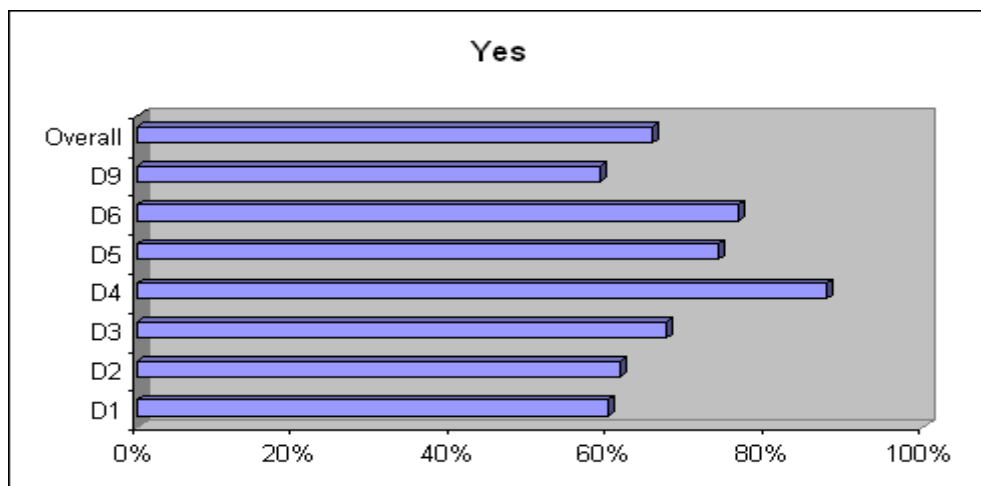
ITD currently has a flex time work schedule policy. This policy allows ITD to schedule and deploy our workforce to achieve outstanding customer service and optimal productivity, and to provide leadership in promoting environmental quality. Alternative work schedules currently include flexible work schedules (FWS) and to some extent compressed work week schedules (CWS).

### **Previous Accomplishments:**

FSW - ITD District 1 and 2 offices plan their work schedules around Boise headquarter's time. This, combined with employees in other parts of the state that arrive or leave work at times other than the most congested hour between 7-8 AM and 4-6 PM translates into approximately 63.7% of all ITD staff arriving at their ITD worksite before 7:00 AM and approximately 25% leaving work by 4:00 PM, with an additional 21% leaving by 4:30 PM.

CWS - 17% of ITD staff have compressed work schedules. Depending on the schedule chosen, CWS can reduce commute trips up to 20%. ITD's district four office has encouraged a 4/10 work week and the employee survey showed the impact this policy direction has taken, with 53% responding that they worked a 4/10 schedule.

The survey asked the question ***"Does your job lend itself to a flexible schedule?"*** District 4 employees were more likely to respond yes based on their history with the 4/10 work week schedule.



If all of ITD could participate in CWS as is happening in District # 4, the potential reduction in a day less commute would be approximately 600 less round trips each week, or 31,200 trips a year. On average the weekly commute for ITD employees commute is approximately 76.2 miles based on information gained from the employee survey. This would mean a savings of 2,377,440 miles driven in the course of a year if approximately 50 percent of our work force used a 4/10 CWS work schedule. Another benefit of a 4/10 CWS work week generally means staff are traveling to work during less congested hours.

ITD actively participates in "May and Motion," which encourages alternative transportation use. To encourage participation we establish competitions between our various districts. We also provide Human Resource staff assistance to those who want to car-pool or van pool

### **Commute Action Plan FY 2008-2009**

- By FY 2009 increase use of compressed work week: Increase overall staff utilization of a four day work week schedule to 25% or greater of the ITD work force.
  1. Review policy and update as needed
  2. Review the District # 4 experience with a four day work week
  3. Provide supervisor training and guidance on CWS
  4. Encourage a four day work week in highly congested areas of the state
- By FY 2009 HR will assess the feasibility of when and how telecommuting could be instituted at ITD.
- Immediately take action to encourage use of flexible work schedules to stagger the commute arrival and departure time outside the most congested commute hours.
- Continue to support transit, van pool and car pools through the use of Transit Fairs.
- By June 2008 meet with the state Department of Administration to determine if state contracts can be established with transit agencies to provide fare reductions to employees participating in transit programs.
- ITD will immediately use the survey results to assess possible additional actions that can be taken to remove obstacles to greater use of alternative transportation. More than 80% of ITD employees responded to the survey. There is a wealth of information that will continue to be reviewed for additional actions.
- During the Capitol restoration the ITD headquarters parking is available to construction workers who then catch a city bus to their work site at the Capitol building.

## **Other Action Areas**

There are a number of additional actions ITD plans to take to reduce our direct and indirect greenhouse gas emissions:

### **Reduce/Reuse/Recycle**

#### **Previous Accomplishments:**

- An on-line bidding tool is reducing errors in contractor's bids and eliminating the need to travel for bid openings. The tool allows customer service improvement because only completed bids can be submitted. Apparent low bidders are posted on-line immediately after openings eliminating the need for contractors to travel to Boise or hire representatives.
- More than 30 technical manuals and guidebooks are now posted on-line or on CDs that cost only \$1 to burn. Additionally, 1,300 updated CDs are provided twice a year rather than have the material printed. In the past ITD did not provide twice-a-year updates due to the high cost of printing. If ITD were to provide updates annually and complete reprints including binders and tabs every three years for 1,000 manuals, it would cost in excess of \$500,000 annually.
- ITD currently contracts to recycle all paper, printer cartridges and telephone books. Big metal is salvaged and sold as scrap.
- ITD headquarters' partners with the Ada County land fill by providing one of its parking sites for household hazardous waste collection the third Thursday of each month.
- At headquarters our school partner is Lowell School; aluminum cans are collected and provided to the school to help raise money for school activities and projects.

### **Reduce/Reuse/Recycle FY 2008-2009 Action Plan**

- The annual Statewide Transportation Improvement Program will be distributed via CD and posted on line starting in FY 2008. Distribution of this document goes to more than a 1,000 organizations or individuals.
- By June 2008 ITD will investigate ways to expand the recycling program to include aluminum, plastic, and cardboard.
- By April 1, 2008 publish an ITD Director's memo on Energy Conservation and Greenhouse Gas Reduction Guidelines. See Appendix F.

## **Communication Plan**

### **Background:**

ITD is committed to follow through and continuous improvement of our greenhouse gas reduction strategies. Issuance of a Director's memo on conservation, news articles in our weekly on line employee newsletter, the Transporter, and the action items developed in this document are each examples of that commitment.

A review of the employee suggestions indicated overuse of vehicle idling. The inappropriateness of this will be addressed in the Director's memo and other management action and communicated to staff.

### **Communication Action Plan FY 2008-2009**

- The ITD greenhouse team will meet at least quarterly to evaluate progress and determine additional greenhouse gas emission reduction steps to recommend to management and employees. A variety of communication tools will be used to inform employees and management, including email, meetings, web information and news articles in the Transporter See Appendix G .
- At least quarterly place an article in our weekly in-house online newspaper concerning actions that can be taken to reduce emissions.
- When the audit information is complete, ITD will update this plan to include actions that will be taken and expected GHG reductions as a result of those actions.
- By April 1, 2008 publish an ITD Director's memo on Energy Conservation and Greenhouse Gas Reduction Guidelines. See Appendix F.
- Create online tools and information about energy conservation.

## **Appendix A - Governor's Executive Order 2007-21**

### **C.L. "BUTCH" OTTER, GOVERNOR EXECUTIVE DEPARTMENT STATE OF IDAHO BOISE EXECUTIVE ORDER NO. 2007-21**

#### ***ESTABLISHING A POLICY TO REDUCE FOSSIL FUEL USE AND GREENHOUSE GAS EMISSIONS FROM STATE VEHICLES***

*WHEREAS, the State of Idaho has demonstrated leadership by establishing policies to reduce air pollution, wasteful, uneconomical and unnecessary uses of energy and greenhouse gas emissions caused by state government; and*

*WHEREAS, emissions from vehicles are a major source of greenhouse gas gases in Idaho as well as a major source of air pollution in Idaho's urban areas; and*

*WHEREAS, to perform their duties and service the citizens State of Idaho departments, offices and agencies own or lease a significant fleet of motor vehicles; and*

*WHEREAS, the State of Idaho can and should lead by example managing its state vehicle fleet to improve and protect air quality, reduce greenhouse gas emissions and reduce the amount of fossil fuels purchased and used; and*

*WHEREAS, reducing fossil fuel use and increasing fuel efficiency in the state's vehicle fleet will not only reduce greenhouse gas and air pollutant emissions but will also maximize efficiency in state government operations and reduce annual operating costs;*

*NOW, THEREFORE, I, C.L. "BUTCH" OTTER, Governor of the State of Idaho, by the authority vested in me under the Constitution and the laws of the State of Idaho do hereby order the following:*

*1. All executive branch departments, agencies and offices of the State of Idaho shall decrease the amount of gasoline and diesel used in State vehicles by:*

*increasing the fuel economy of its vehicles;*

*increasing the operating efficiency; and*

*reducing the number of miles driven by employees.*

*2. All executive branch departments, agencies and offices of the State of Idaho shall limit the purchase or lease of four-wheel drive sport utility vehicles and similar specialty vehicles to situations where there is a clear business need or the mission of the entity requires such vehicles.*

*3. All executive branch departments, agencies and offices of the State of Idaho shall give priority to the purchase and use of hybrid gas/electric and other fuel efficient/low emission and new petroleum efficient technology vehicles.*

*4. The Division of Purchasing will make available to all departments and agencies a list of available vehicle purchasing contracts, which will identify vehicles that meet the requirements of this executive order. Any purchase outside this list will need written justification signed by the director or administrator of the entity.*

*5. The Division of Purchasing will provide the Department of Environmental Quality and Office of the Governor a quarterly vehicle purchasing report.*

*IN WITNESS WHEREOF, I have hereunto set my hand and caused to be affixed the Great Seal of the State of Idaho at the Capitol in Boise on this 20th day of December in the year of our Lord two thousand and seven, and of the Independence of the United States of America the two hundred thirty-second and of the Statehood of Idaho the one hundred eighteenth.*

**C.L. "BUTCH" OTTER  
GOVERNOR**

## **Appendix B – Data and Process used to Calculate Emissions due to Heating**

Emission factors exist for all forms of combustion, whether natural gas in your furnace, coal to fire an industrial boiler, or oil to generate electricity. These factors are derived from studies and tests completed for the sole purpose of finding an emissions rate for specific pollutant emitted by that activity and based on the rate of consumption of that fuel.

These factors were applied to the usage reported by each state agency. For example, if an agency used 10 therms of natural gas to heat the building in which their agency resides during the fiscal year, the number of therms multiplied by the appropriate emissions factors will give the emissions for every pollutant of concern due to natural gas combustion. For agencies that have staff that are tenants in a shared building, the fraction of space they occupied in a building was multiplied by the total building usage to arrive at their emission rate.



## **Appendix C - Data and Process used to Calculate Emissions due to Electricity Use**

As a net importer with three main power supplying companies, we will calculate the emissions by taking the amount of kilowatt hours (kWh) used and multiply them by emissions factors that correspond to the fraction of each of these three power companies used to generate that imported power (i.e., coal, oil, etc.). Then, we will subtract out the percentage of emissions that correspond to the percentage of power produced hydro-electrically in Idaho that year. Emissions factors and percentages will be taken from the Center for Climate Strategies inventory completed for the Western Regional Air Partnership. The formula flow would look something as follows:

1) kWh x (times) emissions factors = (equals) emissions for 100% imported electricity usage

2) Emissions for 100% imported electricity usage - (minus) percentage of hydro-power generated in ID = (equals) total GHG emissions from electricity usage for that agency

## Appendix D - Data and Process used to Calculate Emissions due to ITD vehicles and other internal combustion equipment

### Current ITD Vehicles and Equipment

**Name** Steve Spoor  
**Department/Agency** Transportation  
**Date** Thursday, September 13, 2007

#### Vehicle Fleet:

- 1 Total Number of the following vehicle types you had in your agency's fleet during FY-07.

	<b>Total Number</b>	<b>Total Combined Miles July 1, 2006 to May 31, 2007</b>	<b>Estimated Total Combined Miles for FY-07</b>
a. Gasoline-powered Automobiles	<u>104</u>	<u>944,917</u>	<u>1,030,819</u>
b. Diesel-powered Automobiles	<u>0</u>	<u></u>	<u>0</u>
c. Hybrid Automobiles	<u>4</u>	<u>31,046</u>	<u>33,868</u>
d. Gasoline-powered Pickup Trucks, SUV's, and Minivans (Weight 6,000 lbs and below)	<u>225</u>	<u>1,775,875</u>	<u>1,937,318</u>
e. Gasoline-powered Pickup Trucks, SUV's and Minivans (Weight 6,001 to 12, 000 lbs)	<u>341</u>	<u>4,027,200</u>	<u>4,393,309</u>
f. Heavy-duty Gasoline-powered Vehicles (12,001 lbs and above)	<u>1</u>	<u>397</u>	<u>433</u>
g. Diesel-powered Pickup Trucks, SUV's, and Minivans (Weight 6,000 lbs and below)	<u>0</u>	<u></u>	<u>0</u>

h.	Diesel-powered Pickup Trucks, SUV's and Minivans (Weight 6,001 to 12,000lbs)			
		114	1,366,706	1,490,952
i.	Heavy-duty Diesel-powered Vehicles (12,001 lbs and above)			
	12,001 to 15,000 lbs	26	222,764	243,015
	15,001 to 35,000 lbs	245	1,243,352	1,356,384
	35,001 to 60,000 lbs	320	3,625,530	3,955,124
j.	Motorcycles (on-road street bikes)	0		0

**Non-Road Vehicles and Equipment Fleet:**

3 Please list the number of non-road vehicles and equipment pieces your agency used during FY-07

a.	Motorcycles (Off-Road)	0
b.	Snowmobiles	2
c.	All Terrain Vehicles	5
d.	Specialty Vehicles/Carts	0
e.	Tampers/Rammers	24
f.	Plate Compactors	33
g.	Paving Equipment	1
h.	Concrete/Industrial Saws	17
i.	Crushing/Processing Equipment	0
j.	Sweepers/Scrubbers	0
k.	Rotary Tillers < 6 HP	0
l.	Chain Saws < 6 HP	138
m.	Chain Saws > 6 HP	0
n.	Trimmers/Edgers/Brush Cutters	46
o.	Leaf blowers/Vacuums	3
p.	Snow blowers	5
q.	Turf Equipment	0
r.	Sprayers	0

s.	Generator Sets	<u>122</u>	
	Skid Mounted	<u>54</u>	
	Gasoline Powered		<u>48</u>
	Diesel Powered		<u>6</u>
	Trailer Mounted	<u>68</u>	
	Gasoline Powered		<u>17</u>
	Diesel Powered		<u>51</u>
t.	Pumps	<u>14</u>	
u.	Air Compressors	<u>27</u>	
	Gasoline Powered		<u>3</u>
	Diesel Powered		<u>24</u>
v.	Trenchers	<u>1</u>	
w.	Bore/Drill Rigs	<u>11</u>	
x.	Cement and Mortar Mixers	<u>11</u>	
y.	Cranes	<u>3</u>	
z.	Crushing/Processing Equipment	<u>0</u>	
aa.	Rough Terrain Forklifts	<u>1</u>	
bb.	Forklifts	<u>29</u>	
cc.	Rubber Tire Loaders	<u>131</u>	
dd.	Tractors/Loader/Backhoes	<u>91</u>	
ee.	Skid Steer Loaders	<u>9</u>	
ff.	Dumpers/Tenders	<u>0</u>	
gg.	Aerial Lifts	<u>1</u>	
hh.	Sweepers/Scrubbers		
	Tow Type Sweepers	<u>23</u>	
	Self-Propelled Sweepers	<u>28</u>	

#### Non-Road Vehicles and Equipment Fleet:

3 Please list the number of non-road vehicles and equipment pieces your agency used during FY-07

ii.	Lawn Mowers	<u>33</u>
jj.	Rotary Tillers < 6 HP	<u>0</u>
kk.	Tillers > 6 HP	<u>0</u>

ll.	Rear Engine Riding Mowers	0	
mm.	Lawn and Garden Tractors (Commercial)	22	
nn.	Chippers/Stump Grinders (Commercial)	14	
oo.	Welders	30	
pp.	Pressure Washers	19	
qq.	Shredders > 6 HP	0	
rr.	Outboard Motors	2	
ss.	Personal Water Craft	0	
tt.	Inboard/Sterndrive	0	
uu.	Drill Hammers	8	
vv.	Concrete Curbing Machine	1	
ww.	Concrete Power Trowel	2	
xx.	Push Type Vibratory Roller	1	
yy.	Truck Mounted Street Sweepers	23	
zz.	Crawler Dozers	9	
	Asphalt Milling Machines	3	
	Motor Graders	53	
	Truck Mounted Rotary Snowplows	23	
	Loader Mounted Rotary Snowplows	3	
	Asphalt Maintenance Equipment	75	
	Diesel		
	Powered		46
	Gasoline Powered		17
	Propane Powered		12
	Chip Spreader	3	
	Yard Tugs	7	
	Belt Conveyors	13	
	Asphalt Rollers	48	
	Track Mounted Excavator	6	
	Painting Equipment	10	
	Hydro Seeders	2	

## Calculations

The following is a brief description of the methods applied by DEQ to the information data gathered by ITD.

### **Vehicle Fleet:**

The nine different vehicle categories on the survey directly correspond to the vehicle classifications in our MOBILE6.2 model. This model determines emission factors or emission multipliers for each vehicle class by pollutant. We'll take the number of vehicles by type and the associated vehicle miles traveled and multiply them by the emission factors generated by the model during the last model run used in our recent periodic inventory. This approach will be used to save DEQ personnel time and budget, as the model requires many inputs such as 100-year average temperatures, gasoline Reid vapor pressures, etc. The factors were generated by the model using fleet-mix characteristics derived from Vehicle Identification Number (VIN) decoding that DEQ did for all registered vehicles in Idaho. Use of the last MOBILE6.2 run will allow the GHG calculations to be conservative since most state agency fleets are newer than the Idaho fleet as a whole. DEQ will utilize calculator programs and spreadsheets already created to complete the estimates, further saving time and budget. The calculation flow is as follows: vehicle classification in number times the specific pollutant emissions factors from MOBILE6.2 and miles driven to get (equals) annual emissions by pollutant type for a vehicle class in the agency's fleet.

### **Non-road Vehicle and Equipment Fleet:**

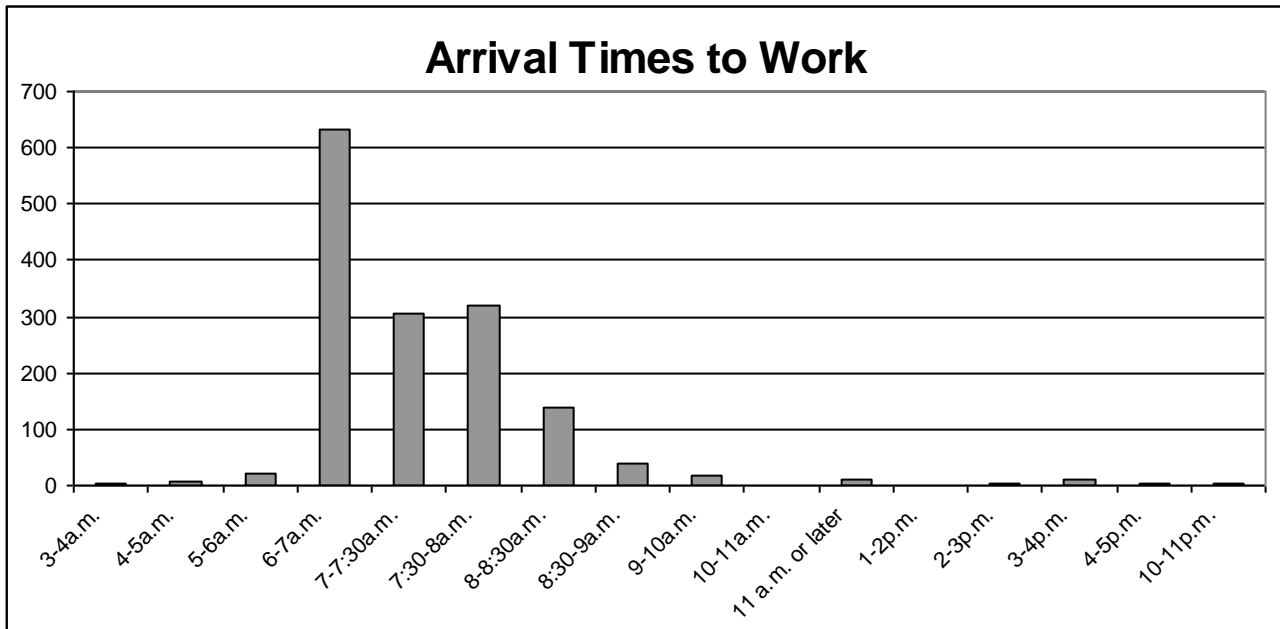
DEQ uses the Environmental Protection Agency's NONROAD model to calculate emission from non-road vehicles and power equipment. The model uses previous-year inventory data, surveys, and studies to generate average emissions factors for typical uses of these types of vehicles and equipment. We will apply the emission factors from the last NONROAD model run to the data and information provided by the state agencies. This again will save personnel time and budget. The NONROAD model takes into account that the average usage time is unknown when applying an emission factor or creating an emissions rate. The calculation flow is as follows: equipment type in number times each specific pollutant emissions factor from NONROAD to get (equals) total annual emissions by pollutant for each equipment type.

## Appendix E – Employee Survey Results on Commute

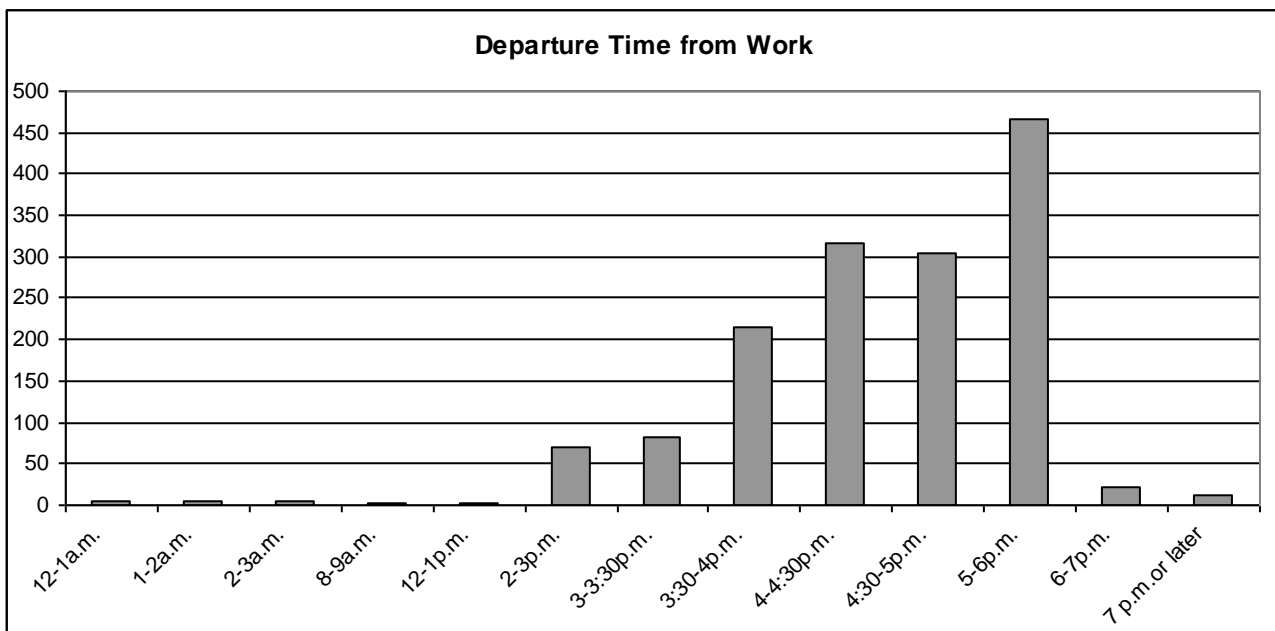
ITD employees were asked to complete a survey that would allow calculation of emissions due to commuting. In addition they were asked a number of questions that were designed to gain an understanding of employee behavior and to gain their input on issues related to greenhouse gas emission reduction.

### Schedule

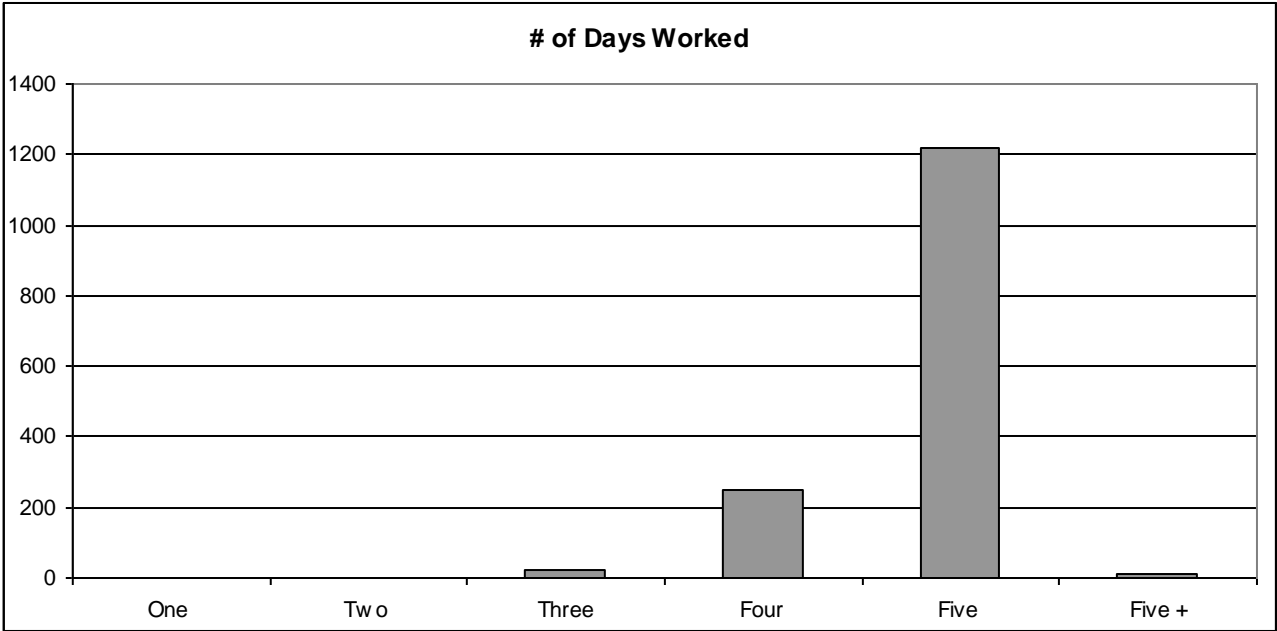
#### 1. What time do you typically arrive for work?



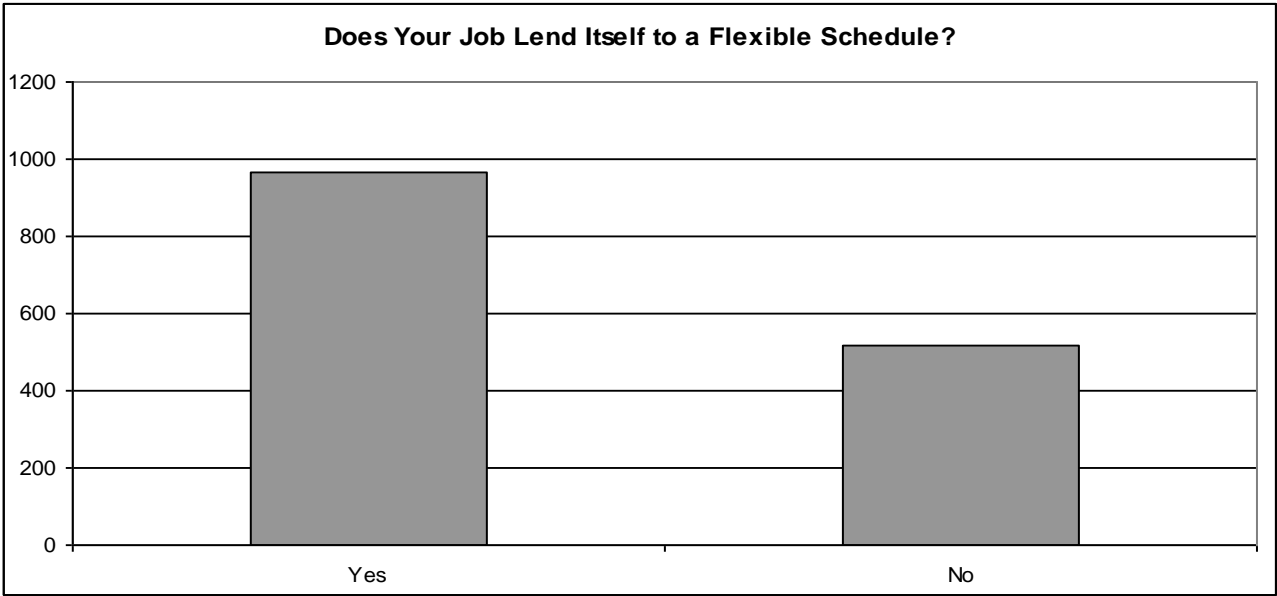
#### 2. What time do you typically leave work?



**3. How many days a week do you typically work?**



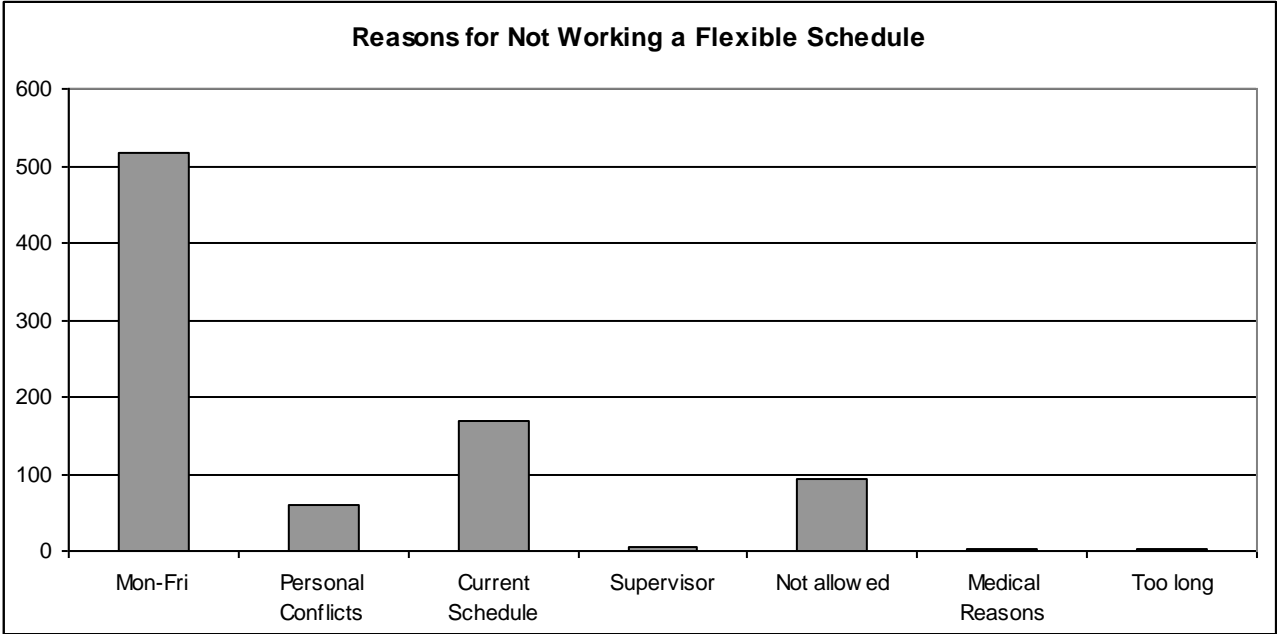
**4. Does your job lend itself to a flexible schedule?**



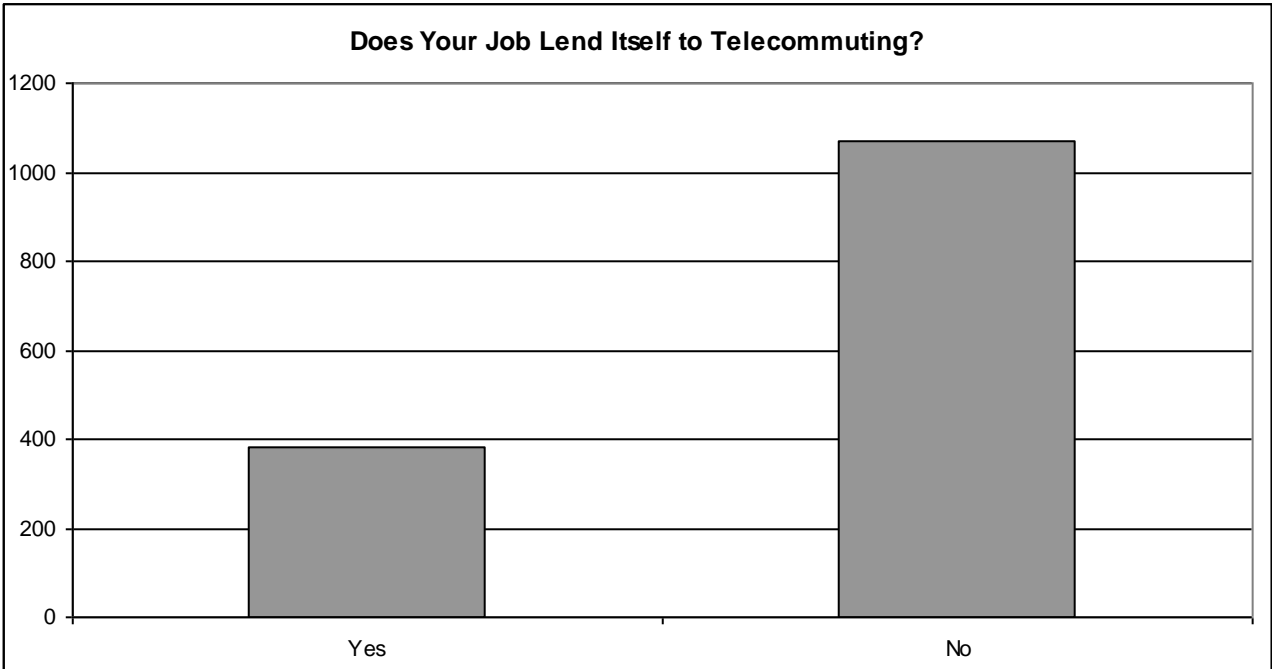


5. If you are unable to work a flexible schedule, why not?

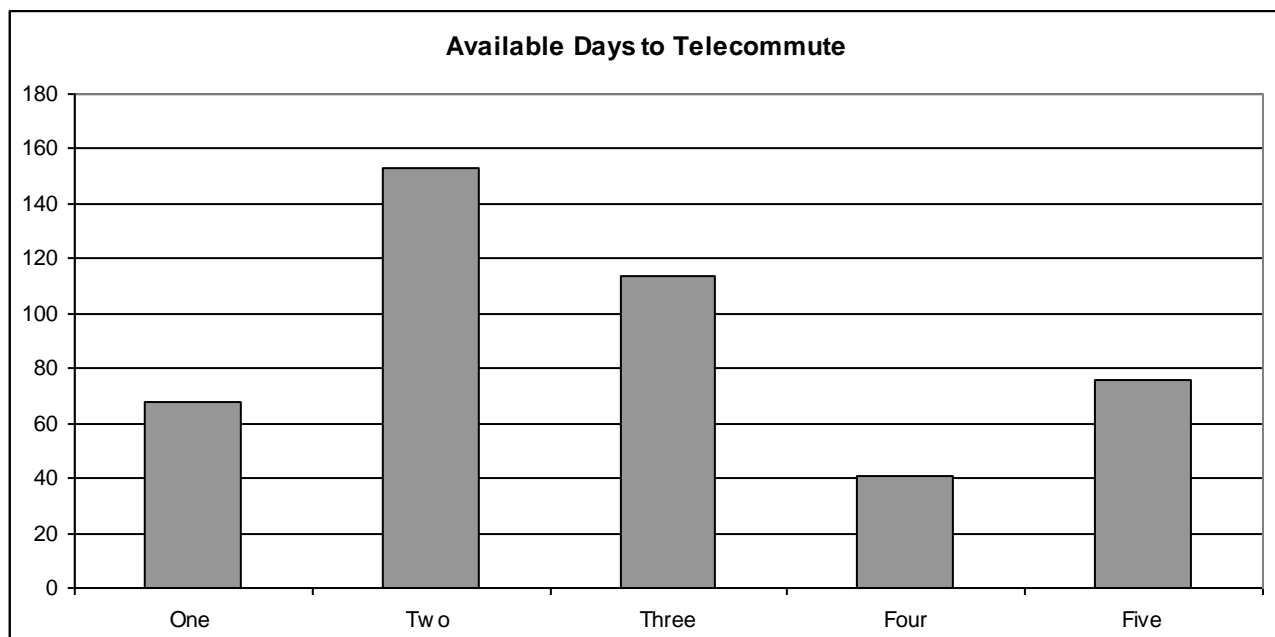
My job requires me to work Monday through Friday	I have personal conflicts with working longer days	I prefer my current schedule	I am a supervisor/administrator	Not allowed	Medical Reason	4 10's would be too long
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6. Does your job lend itself to telecommuting?

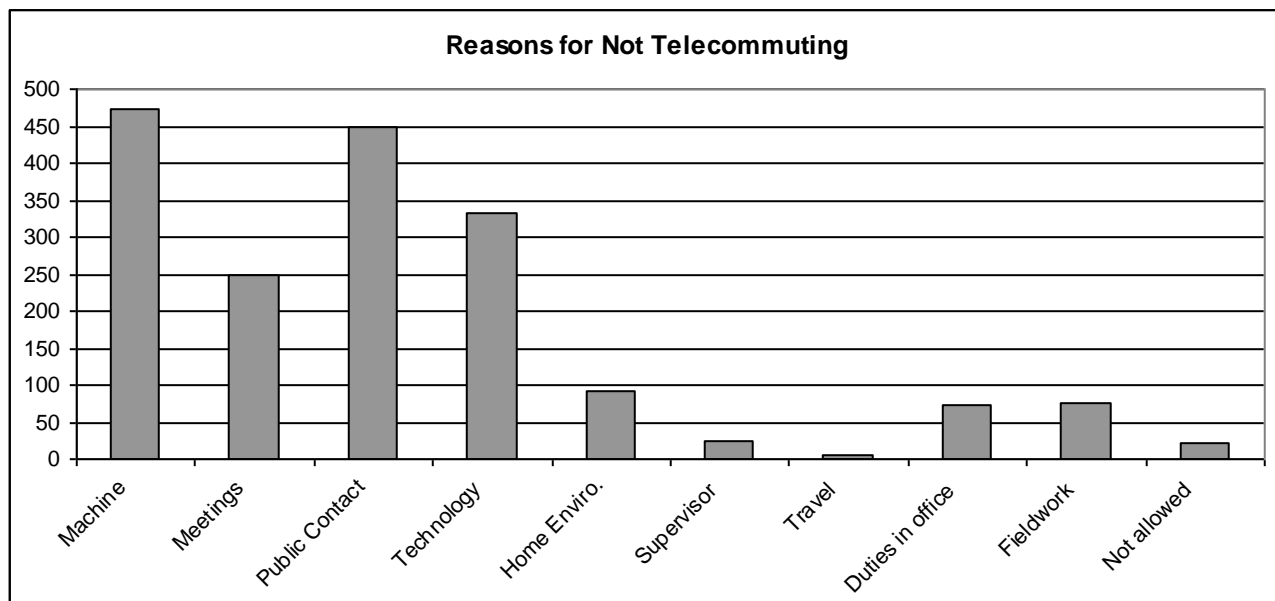


**7. If your job does lend itself to telecommuting, how many days a week would you be able to telecommute?**



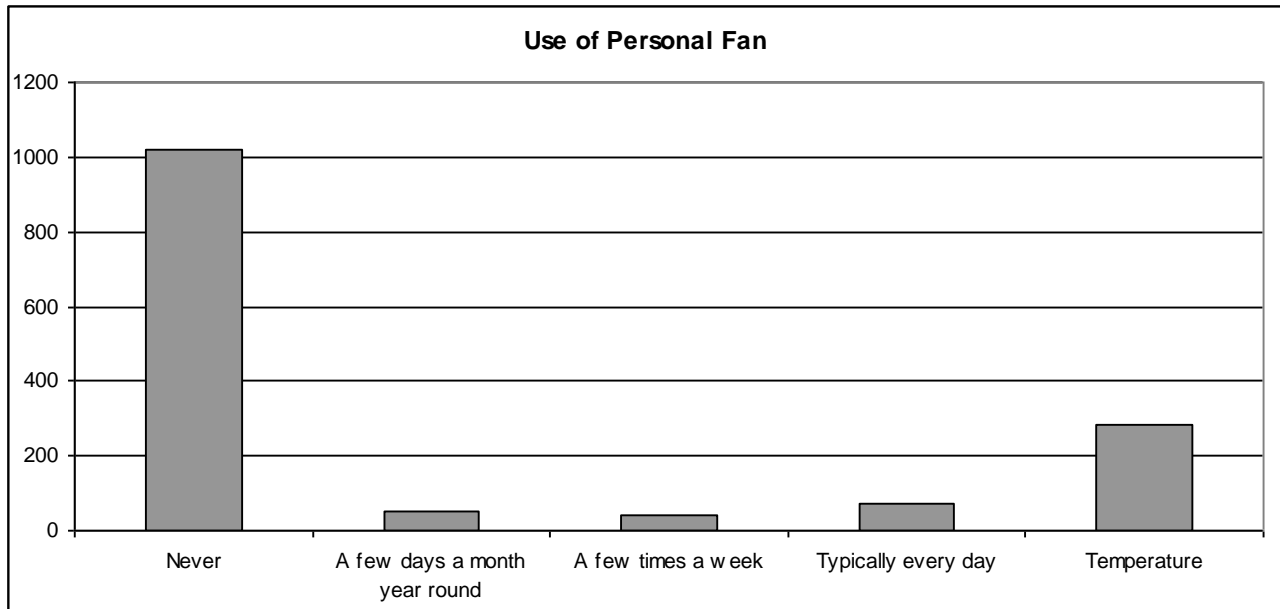
**8. If you are unable to telecommute, why not?**

I need a specific machine to do my job	I regularly attend meetings	My position includes scheduled public contact	I lack the necessary technology at home	My home environment is not conducive to working	I am a supervisor/administrator	My job requires traveling	I have duties in the office	I have field-work	Not allowed
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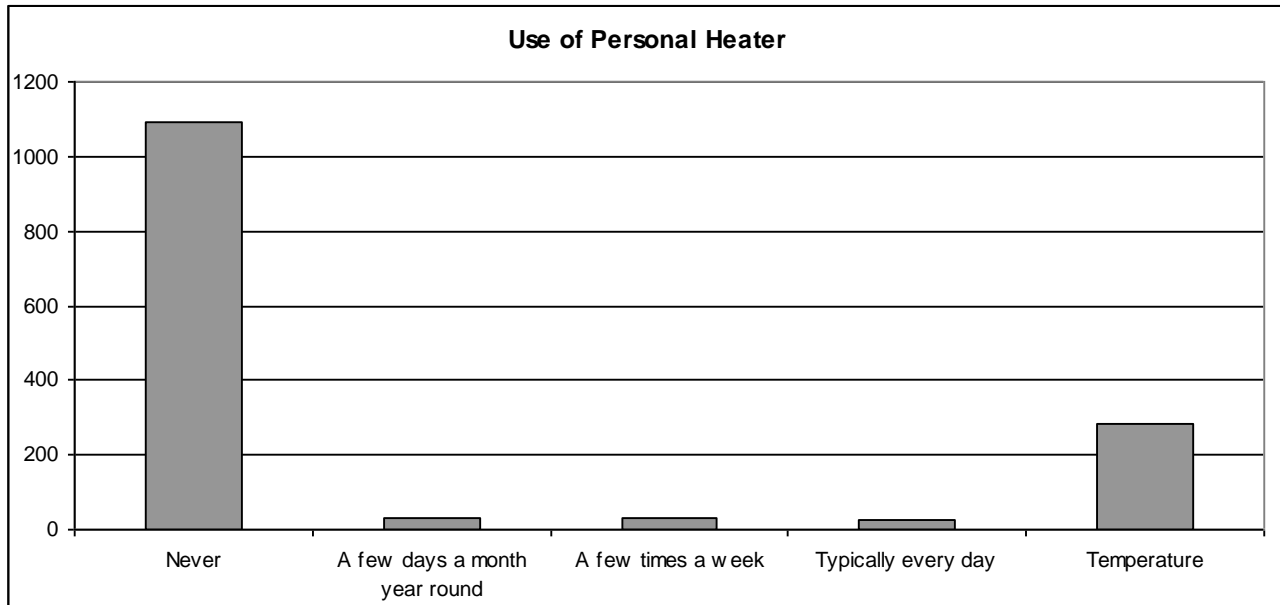


## Heating/Cooling

### 1. How often do you use a personal fan at your desk?

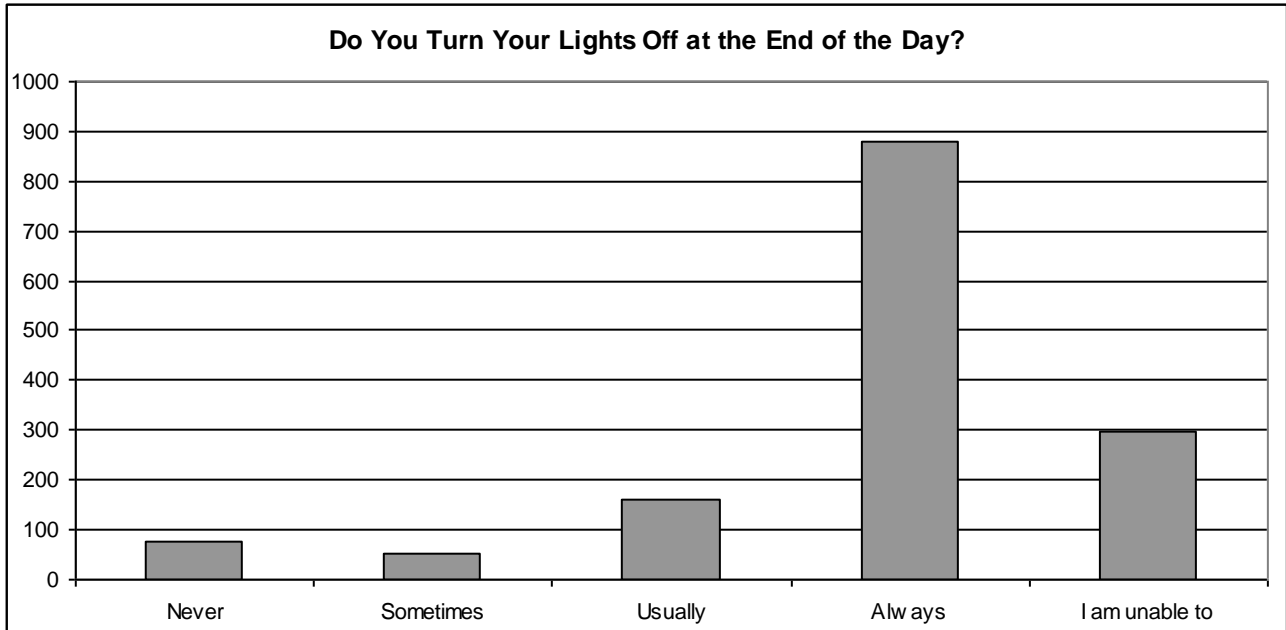


### 2. How often do use a personal heater at your desk?

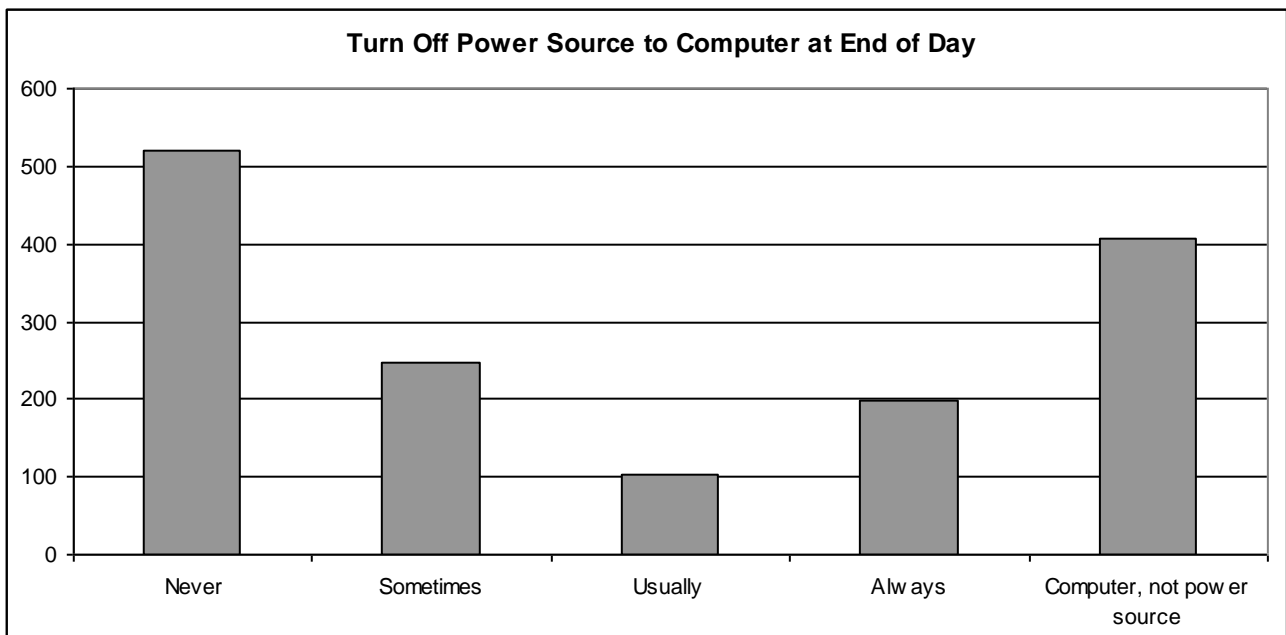


## Lighting/Electronics

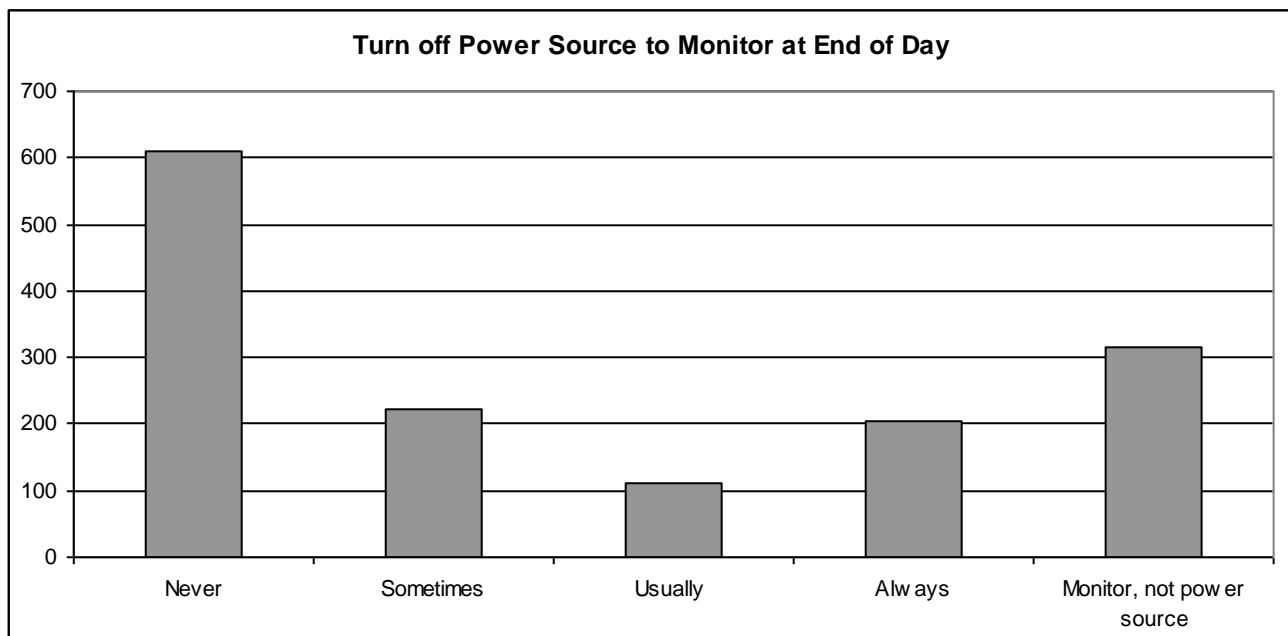
### 1. Do you turn your lights off at the end of the day (including desk lamps)?



### 2. Do you turn off the power source to your computer at the end of the day?

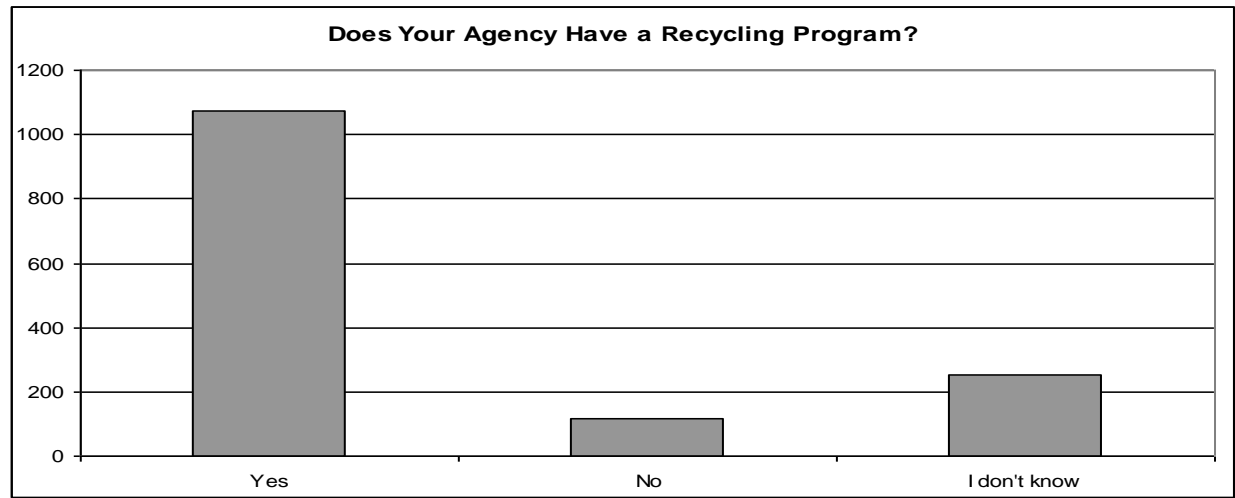


### 3. Do you turn off the power source to your monitor at the end of the day?

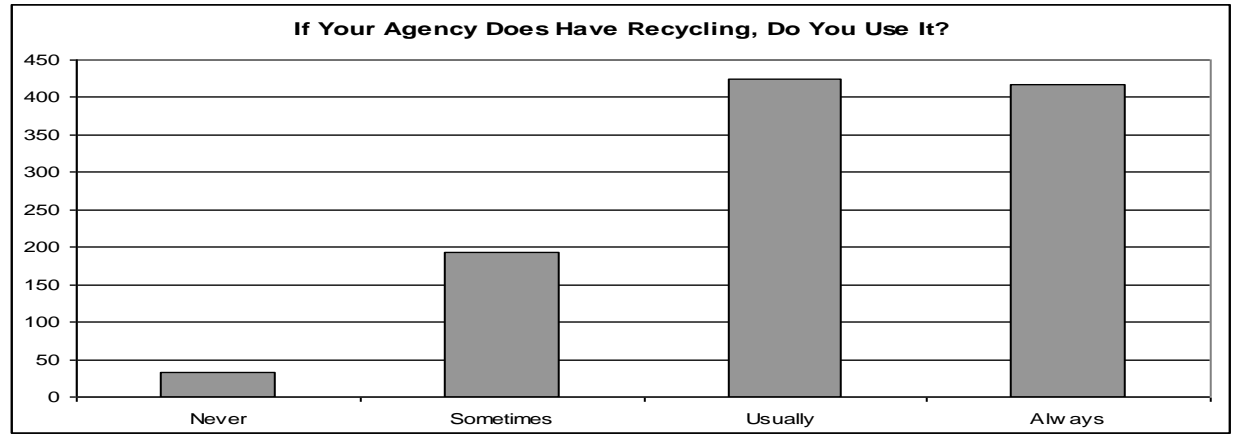


**Recycling**

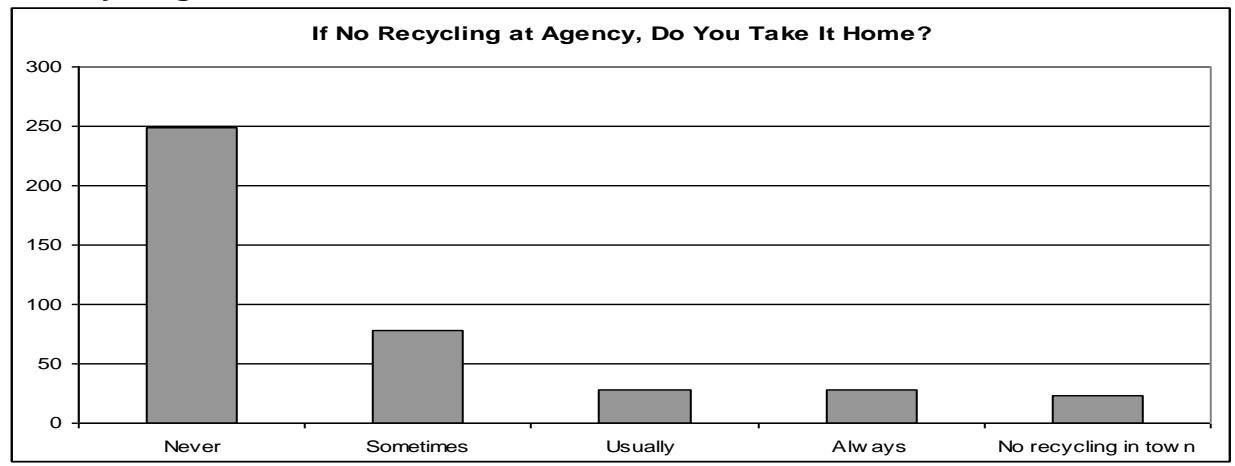
**1. Does your agency have a recycling program?**



**2. If your agency does have a recycling program, do you use it?**



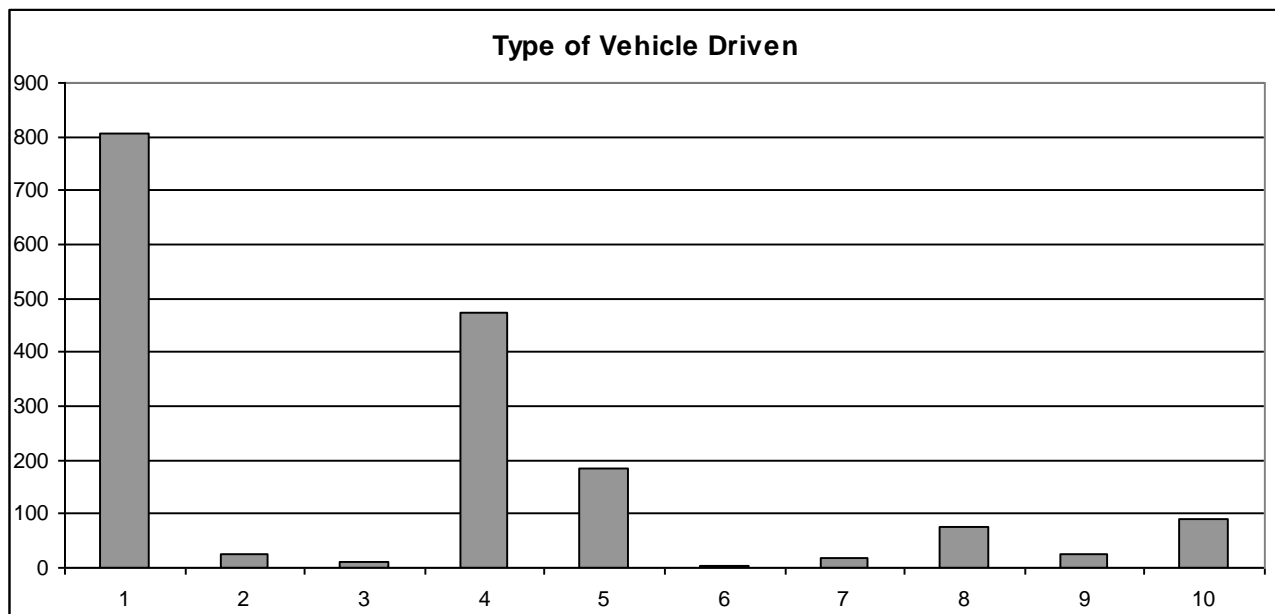
**3. If your agency doesn't have a recycling program, do you take your recyclables home for recycling?**



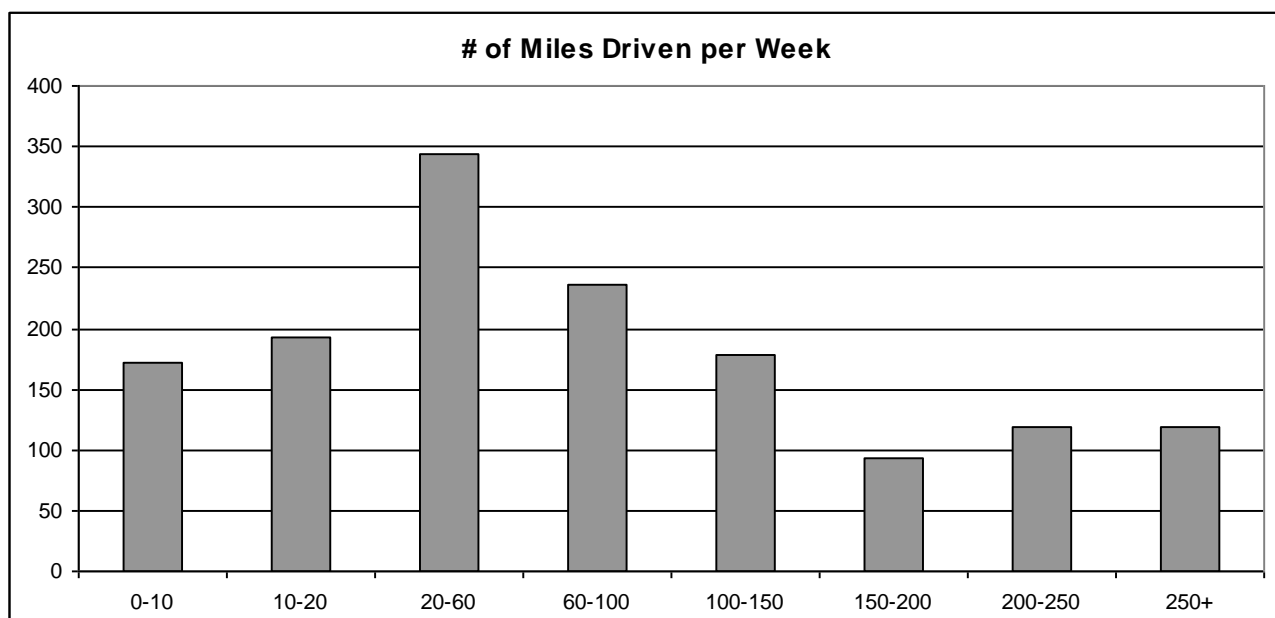
## Transportation

### 1. What type of personal vehicle do you drive to work and within work hours for personal errands?

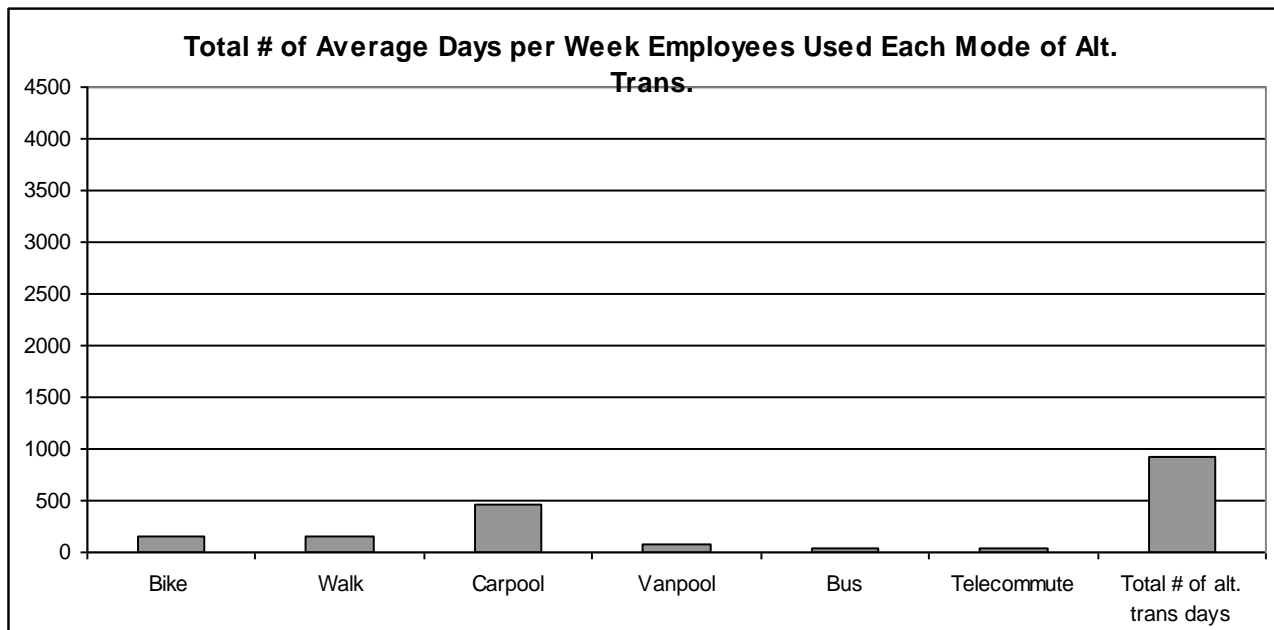
(1) Gas-powered auto-mobile	(2) Diesel-powered auto-mobile	(3) Hybrid auto-mobile	(4) Gas-powered pick-up truck, SUV, Minivan ( $\geq 6,00$ lbs)	(5) Gas-powered pick-up truck, SUV, Minivan (6,001-12,000 lbs)	(6) Heavy-duty gas-powered vehicle ( $\leq 12,001$ lbs)	(7) Diesel-powered Pick-up truck, SUV. Minivan ( $\geq 6,000$ lbs)	(8) Diesel-powered Pick-up truck, SUV. Minivan (6,001-12,000 lbs)	(9) Heavy-duty Diesel-powered vehicle ( $\leq 12,001$ lbs)	(10) Motor-cycles
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### 2. How many miles do you drive your personal vehicle per week to and from work and for personal errands within work hours?



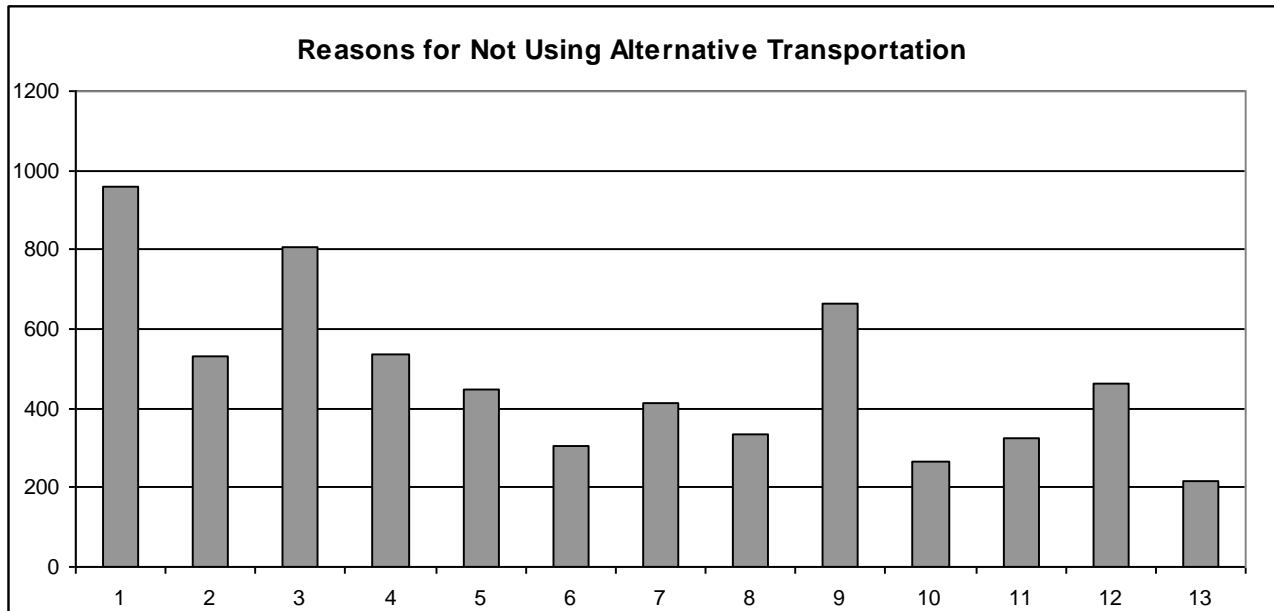
**3. On average how many days per week in FY 07 did you use each mode of alternative transportation to get to work and/or telecommute?**



\* NOTE: Max # of possible total alternate transportation days = 4045

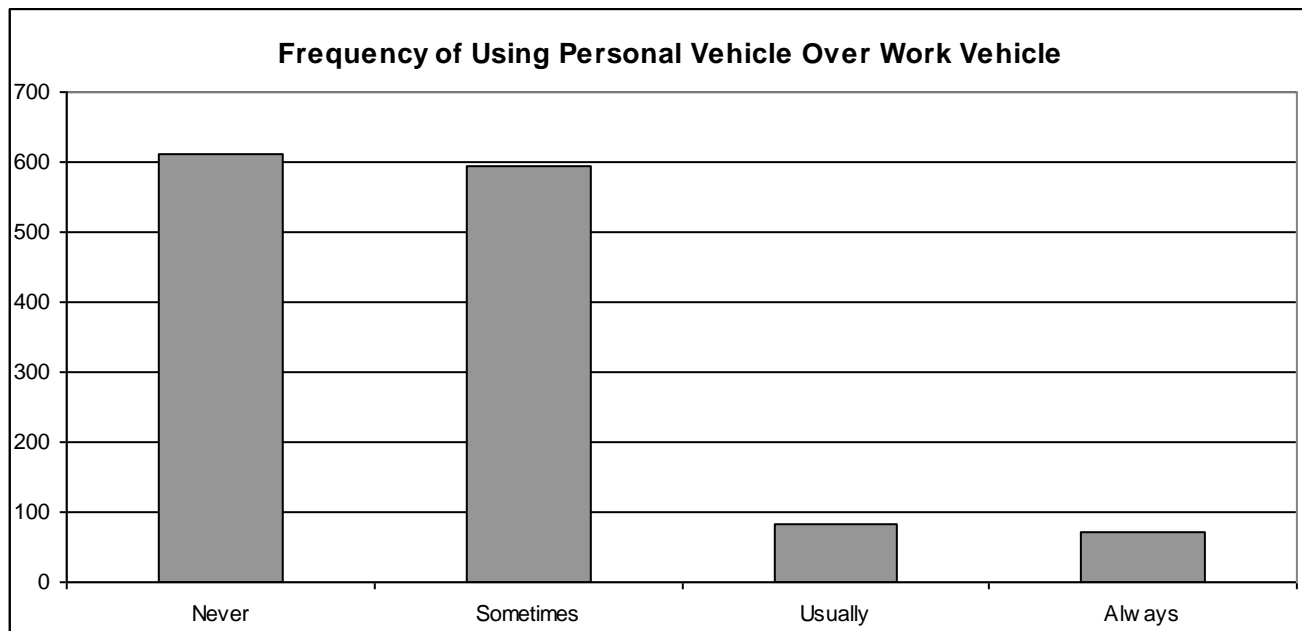
**4. If you do not use alternative transportation or do not use it regularly, what are your reasons for not doing so?**

(1) I live too far from work	(2) There is too much traffic	(3) It does not fit my schedule	(4) The weather is too hot/cold	(5) I don't know anyone to carpool with	(6) I don't know its schedule	(7) I need my car to run errands	(8) it takes too long	(9) There isn't a route by my house	(10) It is not consist ent enough	(11) I would have to wake up earlier	(12) I don't want to	(13) I don't see the need to
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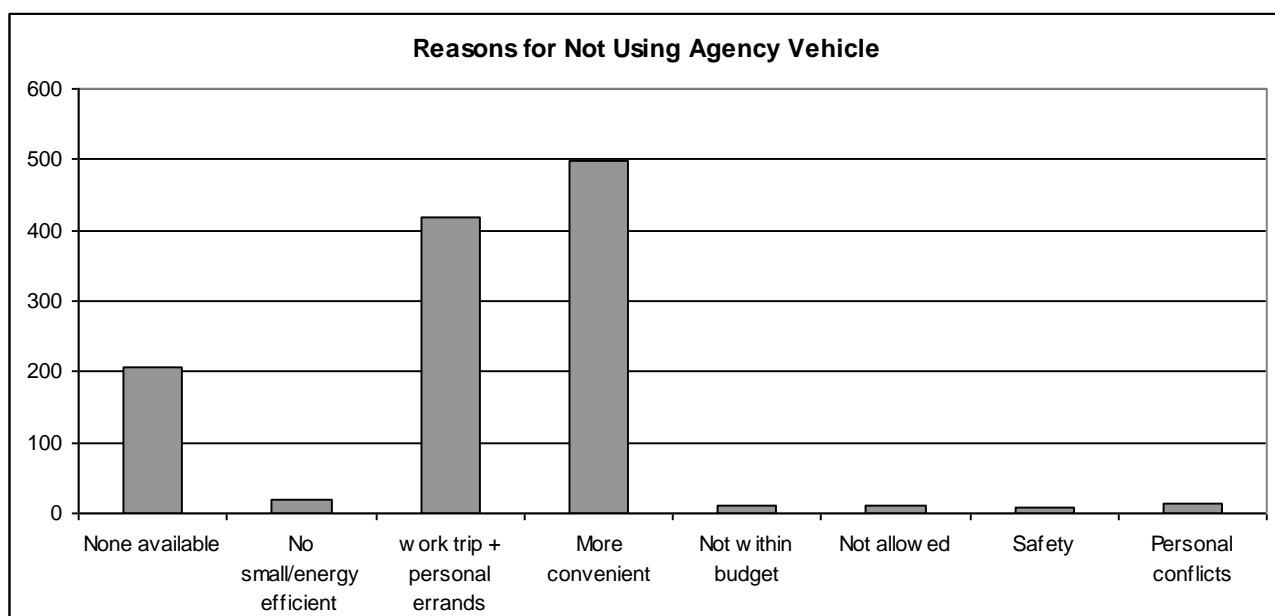


**5. How often do you use your personal vehicle instead of an agency vehicle for work-related trips?**

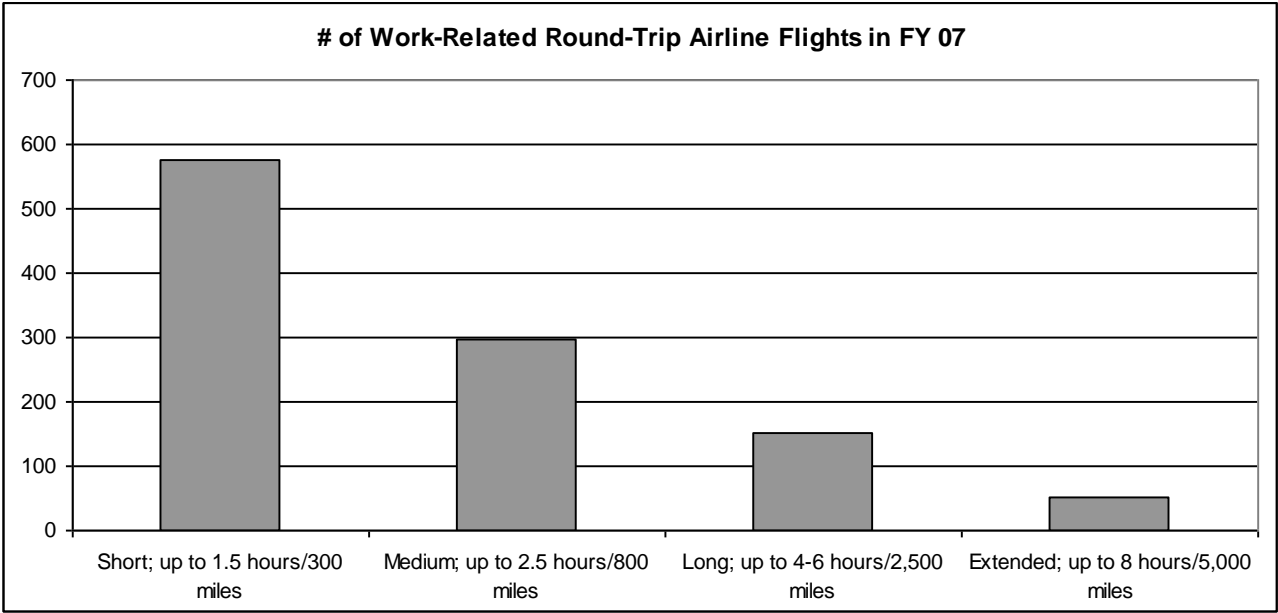


**6. If you have previously used your personal vehicle for work-related trips, why?**

There was no agency vehicle available	There was no small or energy efficient vehicle available	Combined work-related trips with personal errands	More convenient	Not within my department's budget	Not Allowed	State vehicle not safe	Personal conflicts
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7. How many work-related round-trip airline flights did you take in FY 07?



## Appendix F – Director's Memo on Greenhouse Gas Reduction



DRAFT MEMORANDUM NO.

Page 1 of 2

### DIRECTOR'S OFFICE

Date: March 1, 2008

**SUBJECT: ENERGY EFFICIENCY AND GREENHOUSE GAS REDUCTION GUIDELINES**  
**For Attention of: ALL EMPLOYEES**  
**FACILITIES MANAGER**  
**BUILDING COORDINATORS**

Date of Review: This supersedes Directors Memorandum #5 as of March 1, 2008

Governor Executive Orders No. 2001-04, Energy Conservation Considerations in State Buildings, 2007-05, Establishing a State Policy Regarding the role of State Government in reducing Greenhouse Gases, and 2007-21, Establishing a Policy to Reduce Fossil Fuels Use and Greenhouse Gas Emissions from State Vehicles each highlight the importance of the efficient use of energy resources in state operations. Reducing that energy use wherever feasible can reduce greenhouse gas emissions.

Idaho Transportation Department will immediately institute the following actions:

1. *All personal computer systems and monitors should be shut off during evening and weekend hours, except when the help desk requests they be left on for updates to the system. During working hours, screen savers should be disabled and energy-saving, power-down features should be enabled;*
2. *The temperatures in all office buildings should be held to between 74-to-78 degrees in the summer and 72-to-74 degrees in the winter.*
3. *Lighting should be switched to T8 or other efficient lighting whenever possible;*
4. *Lights in office areas should be turned off during weekends and evenings, and headquarter building maintenance and district building coordinators should consider motion sensor lighting, especially in restrooms, conference and storage areas as a means to cut down on electrical usage;*
5. *Exterior lighting should be shut off during all daylight hours. Necessary security and safety lighting should remain on as required;*
6. *All main heating, ventilation and air-conditioning systems (HVAC) should be reviewed for efficient operations. Setback times should be re-evaluated and adjusted to the absolute minimum time required to heat and cool buildings to prepare for operations. All filter-changing procedures should be re-evaluated to determine if changes need to be done more often for efficient operation of the systems;*
7. *Personal heaters should be limited to energy-efficient heater or heated mats (any questions on personal heater usage should be referred to your Business Manager or Building Services);*

8. *All hot water heaters should be reduced in temperature to 105 degrees. Some state buildings may require higher heat levels to meet code requirements;*
9. *Office equipment, such as copy machines, should be shut down during off hours;*
10. *Lights in storage areas should only be turned on when occupied and should be replaced with motion sensor lighting as budget permits;*
11. *HVAC systems should not be operated in off hours for small groups of employees. Heating or cooling an entire building for a small group is not energy efficient;*
12. *All office building exterior surfaces should be evaluated for thermal efficiency. Insulation, window gaskets and seals should be replaced as required;*
13. *Business managers should review heating and lighting bills for any unusual spikes that may indicate building maintenance needs;*
14. *Off-hour security and janitorial crews should be instructed to turn off lights as work is complete in office areas;*
15. *All vending machines should have the lights turned off, and any redundant machines should be removed;*
16. *Whenever practical employees should car-pool to meetings;*
17. *Unnecessary idling of vehicles will stop;*
18. *To reduce automobile and plane travel ITD's video conference or teleconference facilities should be utilized to attend meetings as often as practical and available;*
19. *Where office building recycling is available it shall be used;*
20. *Use duplex features of printers and copiers to reduce paper consumption; and*
21. *Where energy star products are available they shall be required in the purchase specification.*

The Idaho Transportation Department shall immediately institute these recommendations at all headquarters and district facilities. Additionally, each employee will review on-the-job electrical and energy usage and fleet usage, and whenever feasible, implement energy conservation strategies.

Section, district, or department-wide energy conservation strategies that an employee may put together should be submitted to the employee's supervisor for consideration, with a copy sent to the Administration Division Administrator. Supplementary conservation initiatives (including other energy sources besides electricity) shall be implemented whenever feasible and warranted.

\_\_\_\_\_  
signed  
Pamela, K. Lowe  
Director

## Appendix G – Transporter news articles

*Published 10-12-07*

### Greenhouse Gases — An Overview

Scientific research suggests "greenhouses" that trap heat in the atmosphere are contributing to global warming. Some greenhouse gases, such as carbon dioxide, occur naturally and are emitted into the atmosphere both through natural processes and human activities.

The principal greenhouse gases that enter the atmosphere because of human activities are:

**Carbon Dioxide (CO<sub>2</sub>):** Carbon dioxide enters the atmosphere through the burning of fossil fuels (oil, natural gas and coal), solid waste, trees and wood products and as a result of other chemical reactions (such as the manufacture of cement).

Carbon dioxide also is removed from the atmosphere (or sequestered) when it is absorbed by plants as part of the biological carbon cycle. About 75 percent of all greenhouse gases emitted globally are CO<sub>2</sub>.

**Methane (CH<sub>4</sub>):** Methane is emitted during the production and transport of coal, natural gas and oil. Methane emissions also result from livestock and other agricultural practices and by the decay of organic waste in municipal solid waste landfills.

**Nitrous Oxide (N<sub>2</sub>O):** Nitrous oxide is emitted during agricultural and industrial activities, as well as during combustion of fossil fuels and solid waste.

Fluorinated gases: Hydrofluorocarbons, perfluorocarbons and sulfur hexafluoride are synthetic, powerful greenhouse gases that are emitted from a variety of industrial processes. Fluorinated gases sometimes are used as substitutes for ozone-depleting substances (CFCs, HCFCs and halons).

These gases typically are emitted in smaller quantities, but because they are potent greenhouse gases, they sometimes are referred to as High Global Warming Potential gases (High GWP gases).

Americans make up less than five percent of the world's population, yet they account for 25 percent of the carbon dioxide emissions. The U.S. ranks first or second, depending on whether it has been passed by China, in global greenhouse gas emissions.

Idaho is among the states with the lowest emissions of carbon dioxide (ranking 47th), however, the state emits more CO<sub>2</sub> than roughly 100 nations.

*Published 10-12-07*

### ITD group to coordinate effort to reduce greenhouse emissions

Idaho Gov. C.L. "Butch" Otter issued an executive order this spring directing state agencies to assess energy consumption and identify measures that can reduce greenhouse gas emissions (GHG). He charged the Department of Environmental Quality to coordinate efforts by all state agencies.

His order prescribes:

1. The Director of the Department of Environmental Quality shall take a leadership role to work with all state government departments and agencies and shall serve as the central point of contact for coordination and implementation of greenhouse gas reduction efforts and other associated activities;

2. The Director of the Department of Environmental Quality shall develop a greenhouse gas emission inventory and provide recommendations to the Governor on how to reduce greenhouse gas emissions in Idaho, recognizing Idaho's interest in continued growth, economic development and energy security.

"...regardless of your opinion on climate change, reducing greenhouse gas emissions is good for everyone," Otter said recently at a Sustainability and Climate Change summit sponsored by the University of Idaho. He wants to see Idaho develop an efficient, cost-effective, data-driven response to greenhouse gas reductions. Greenhouse gases are gases that trap heat in the atmosphere of which the most common source is CO<sub>2</sub> which is emitted when fossil fuels (oil, natural gas and coal), trees etc. are burned.

Toward that end, DEQ created a State Agency Greenhouse Gas Working Group in August and ITD created a similar internal team in September and began developing a strategy of assessing the department's energy consumption and identifying ways to reduce the contribution to gas emissions. Matt Moore is chair of ITD's team that includes about a dozen members who represent a cross-section of divisions.

ITD has produced a preliminary report on its facilities and transportation fleet but wants to learn about the commuting patterns and work schedules of employees. An online survey of all state employees is planned later this fall.

The survey seeks to gather baseline data for Idaho greenhouse gas emissions associated with work related employee travel and employee habits during work (such as recycling). Once the data is collected it will be used in conjunction with ITD's Fleet and Building GHG Emission Inventories to develop an action plan for the reduction of greenhouse gas emissions.

Paper versions of the survey will be available for employees who do not have computer access.

The survey should reveal important information about how employees commute to work, whether they use carpools, vanpools, public transportation or other alternative modes. Results could lead to greater emphases on telecommuting, teleconferencing, alternative work sites and flex schedules.

Patti Raino, a member of the ITD greenhouse gas team encourages employees to submit suggestions to reduce energy consumption and explain any successful or ongoing efforts.

Published 11-09-7

#### **REMINDER:**

ITD Director Pam Lowe encourages employees to take a few minutes to complete an online survey that will help the department and the state of Idaho develop an initiative to reduce greenhouse gas emissions. ITD's response has been excellent so far, and nearly 1,300 people have accessed survey site as of Thursday (Nov. 8). The deadline for completing the survey has been extended to Nov. 16.

[Click here](#) to access the survey

Published 2-1-8

### **Save the earth, one-half inch at a time**

ITD employees can begin saving the planet an inch – or more precisely, one-half inch – at a time, according to a suggestion that was relayed from the Division of Planning and Programming.

Administrator Matt Moore recently received a tip that can save paper, and when compounded throughout the department could result in cost savings.

Here's how it works:

At half an inch, it's a small idea, but if everyone did it, we could save acres of forests. And it's as simple as clicking a few buttons on a Microsoft Word document before sending it to the printer.

"Change the Margins" is campaigning for individuals, companies, and universities to reduce standard paper margins to 0.75 inch. (The default margin on a Microsoft Word document is 1.25 inches.) The idea began when the campaign's founder reduced her own margins to save money on paper. Implemented on a much larger scale, this simple step could make a big impact on paper usage over time, especially if large corporations and universities sign on.

Here's how to change your margins in Microsoft Word: Go to File and click on Page Setup. Using the arrows, decrease top, bottom, and side margins to .75." Click "Default." Click "yes" to make these your standard margin settings.

Finished documents will have smaller margins, enabling more text per page, and ultimately reducing the number of pages required.